

SI-MNH-955a  
3-4-64

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA SURVEY CHART A

DATE: 17 May 64 Total Minutes: 657 Total Miles 105

I. Total Abundance of birds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>105</u>	<u>619</u>	<u>5.8</u>	<u>5.8</u>

II. Abundance of the Shearwater-Petrel-Albatross Group:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	WT	P	B	T	WT	P	B	T	WT	P	B	T	WT	P	B
<u>81</u>	<u>38</u>	<u>1</u>	<u>40</u>	<u>330</u>	<u>229</u>	<u>1</u>	<u>81</u>	<u>4.07</u>	<u>6.03</u>	<u>1</u>	<u>2.03</u>	<u>3.14</u>	<u>2.18</u>	<u>.01</u>	<u>.77</u>

III. Abundance of Tropicbirds:

No. Sightings			No. Birds			Birds/Sighting			Birds/Mile		
T	RT	WT	T	RT	WT	T	RT	WT	T	RT	WT
<u>6</u>		<u>6</u>	<u>12</u>		<u>12</u>	<u>2</u>		<u>2</u>	<u>.11</u>		<u>.11</u>

IV. Abundance of Terns:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>23</u>	<u>271</u>	<u>11.78</u>	<u>2.58</u>

V. Abundance of Shorebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
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VI. Abundance of Boobys:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	BF	RF	B	T	BF	RF	B	T	BF	RF	B	T	BF	RF	B
<u>3</u>		<u>3</u>		<u>5</u>		<u>5</u>		<u>1.67</u>		<u>1.67</u>		<u>.05</u>		<u>.05</u>	

VII. Abundance of Frigatebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
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VIII. Abundance of Flocks:

Total No. Flocks	Total No. Birds	Total No. F/Mi.	No. Feeding Flocks	No. Feeding Birds	No. Feeding F/MI.
<u>8</u>	<u>472</u>	<u>.08</u>	<u>8</u>	<u>472</u>	<u>.08</u>
	<u>473</u>			<u>473</u>	

SI-MNH-955a  
3-4-64

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA SURVEY CHART A

DATE: 18 May 64 Total Minutes: 775 Total Miles 131

I. Total Abundance of birds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>41</u>	<u>320</u>	<u>7.80</u>	<u>2.44</u>

II. Abundance of the Shearwater-Petrel-Albatross Group:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	WT	P	B	T	WT	P	B	T	WT	P	B	T	WT	P	B
<u>33</u>	<u>14</u>	<u>1</u>	<u>2</u>	<u>160</u>	<u>123</u>	<u>1</u>	<u>2</u>	<u>4.85</u>	<u>8.79</u>	<u>1</u>	<u>1</u>	<u>1.22</u>	<u>.94</u>	<u>.01</u>	<u>.02</u>

III. Abundance of Tropicbirds:

No. Sightings			No. Birds			Birds/Sighting			Birds/Mile		
T	RT	WT	T	RT	WT	T	RT	WT	T	RT	WT
<u>2</u>	<u>-</u>	<u>1</u>	<u>2</u>	<u>-</u>	<u>1</u>	<u>1</u>	<u>-</u>	<u>1</u>	<u>.02</u>	<u></u>	<u>.01</u>

IV. Abundance of Terns:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>12</u>	<u>158</u>	<u>13.17</u>	<u>1.21</u>

V. Abundance of Shorebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile

VI. Abundance of Boobys:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	BF	RF	B	T	BF	RF	B	T	BF	RF	B	T	BF	RF	B

VII. Abundance of Frigatebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile

VIII. Abundance of Flocks:

Total No. Flocks	Total No. Birds	Total No. F/Mi.	No. Feeding Flocks	No. Feeding Birds	No. Feeding F/MI.
<u>6</u>	<u>269</u>	<u>.05</u>	<u>2</u>	<u>216</u>	<u>.02</u>

SI-MNH-955a  
3-4-64

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA SURVEY CHART A

DATE: 19 May 64 Total Minutes: 767 Total Miles 135

I. Total Abundance of birds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>78</u>	<u>410</u>	<u>5.13</u>	<u>3.04</u>

II. Abundance of the Shearwater-Petrel-Albatross Group:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	WT	P	B	T	WT	P	B	T	WT	P	B	T	WT	P	B
<u>71</u>	<u>19</u>	<u>15</u>	<u>8</u>	<u>182</u>	<u>58</u>	<u>18</u>	<u>8</u>	<u>2.56</u>	<u>3.05</u>	<u>1.20</u>	<u>1</u>	<u>1.35</u>	<u>.43</u>	<u>.13</u>	<u>.06</u>

III. Abundance of Tropicbirds:

No. Sightings			No. Birds			Birds/Sighting			Birds/Mile		
T	RT	WT	T	RT	WT	T	RT	WT	T	RT	WT
<u>1</u>	<u>1</u>		<u>1</u>	<u>1</u>		<u>1</u>	<u>1</u>				

IV. Abundance of Terns:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>6</u>	<u>217</u>	<u>36.17</u>	<u>1.61</u>

V. Abundance of Shorebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile

VI. Abundance of Boobys:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	BF	RF	B	T	BF	RF	B	T	BF	RF	B	T	BF	RF	B
<u>6</u>	<u>5</u>			<u>9</u>	<u>6</u>			<u>1.5</u>	<u>1.2</u>			<u>1.07</u>	<u>1.04</u>		

VII. Abundance of Frigatebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile

VIII. Abundance of Flocks:

Total No. Flocks	Total No. Birds	Total No. F/Mi.	No. Feeding Flocks	No. Feeding Birds	No. Feeding F/MI.
<u>9</u>	<u>315</u>	<u>.07</u>	<u>4</u>	<u>279</u>	<u>.03</u>



SI-MNH-955a  
3-4-64

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA SURVEY CHART A

DATE: 20 May 64 Total Minutes: 752 Total Miles 124

I. Total Abundance of birds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>78</u>	<u>583</u>	<u>7.47</u>	<u>4.70</u>

II. Abundance of the Shearwater-Petrel-Albatross Group:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	WT	P	B	T	WT	P	B	T	WT	P	B	T	WT	P	B
73	29	20	8	291	235	22	8	3.99	8.1	1.1	1	2.35	1.90	.18	.06

III. Abundance of Tropicbirds:

No. Sightings			No. Birds			Birds/Sighting			Birds/Mile		
T	RT	WT	T	RT	WT	T	RT	WT	T	RT	WT
3			3			1			.02		

IV. Abundance of Terns:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>6</u>	<u>280</u>	<u>46.67</u>	<u>2.26</u>

V. Abundance of Shorebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile

VI. Abundance of Boobys:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	BF	RF	B	T	BF	RF	B	T	BF	RF	B	T	BF	RF	B
3	3			3	3			1	1			.02	.02		

VII. Abundance of Frigatebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>2</u>	<u>2</u>	<u>1</u>	<u>.02</u>

VIII. Abundance of Flocks:

Total No. Flocks	Total No. Birds	Total No. F/Mi.	No. Feeding Flocks	No. Feeding Birds	No. Feeding F/MI.
<u>7</u>	<u>489</u>	<u>.06</u>	<u>6</u>	<u>484</u>	<u>.05</u>



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 \underline{203} \phantom{00} \\
 120 \phantom{00} \\
 \underline{116} \phantom{00} \\
 40 \phantom{00} \\
 \underline{38} \phantom{00} \\
 20 \phantom{00} \\
 \underline{19} \phantom{00} \\
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SI-MNH-955a  
3-4-64

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA SURVEY CHART A

DATE: 21 May 64 Total Minutes: 768 Total Miles 131

I. Total Abundance of birds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>25</u>	<u>29</u>	<u>1.16</u>	<u>.22</u>

II. Abundance of the Shearwater-Petrel-Albatross Group:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	WT	P	B	T	WT	P	B	T	WT	P	B	T	WT	P	B
<u>22</u>	<u>2</u>	<u>13</u>	<u>0</u>	<u>26</u>	<u>2</u>	<u>15</u>	<u>0</u>	<u>1.18</u>	<u>1</u>	<u>1.15</u>	<u>0</u>	<u>.20</u>	<u>.02</u>	<u>.11</u>	<u>0</u>

III. Abundance of Tropicbirds:

No. Sightings			No. Birds			Birds/Sighting			Birds/Mile		
T	RT	WT	T	RT	WT	T	RT	WT	T	RT	WT
<u>1</u>		<u>1</u>	<u>1</u>		<u>1</u>	<u>1</u>		<u>1</u>	<u>.01</u>	<del><u>.01</u></del>	<u>.01</u>

IV. Abundance of Terns:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>2</u>	<u>2</u>	<u>1</u>	<u>.02</u>

V. Abundance of Shorebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile

VI. Abundance of Boobys:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	BF	RF	B	T	BF	RF	B	T	BF	RF	B	T	BF	RF	B

VII. Abundance of Frigatebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile

VIII. Abundance of Flocks:

Total No. Flocks	Total No. Birds	Total No. F/Mi.	No. Feeding Flocks	No. Feeding Birds	No. Feeding F/MI.

SI-MNH-955a  
3-4-64

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA SURVEY CHART A

DATE: 22 May 64 Total Minutes: 779 Total Miles 123

I. Total Abundance of birds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>18</u>	<u>36</u>	<u>2</u>	<u>.29</u>

II. Abundance of the Shearwater-Petrel-Albatross Group:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	WT	P	B	T	WT	P	B	T	WT	P	B	T	WT	P	B
<u>15</u>	<u>6</u>	<u>0</u>	<u>5</u>	<u>22</u>	<u>10</u>	<u>0</u>	<u>6</u>	<u>1.47</u>	<u>1.67</u>	<u>0</u>	<u>1.20</u>	<u>.18</u>	<u>.08</u>	<u>0</u>	<u>.05</u>

III. Abundance of Tropicbirds:

No. Sightings			No. Birds			Birds/Sighting			Birds/Mile		
T	RT	WT	T	RT	WT	T	RT	WT	T	RT	WT
<u>2</u>	<u>1</u>	<u>1</u>	<u>2</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>.02</u>	<u>.01</u>	<u>.01</u>

IV. Abundance of Terns:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>2</u>	<u>12</u>	<u>6</u>	<u>.10</u>

V. Abundance of Shorebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile

VI. Abundance of Boobys:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	BF	RF	B	T	BF	RF	B	T	BF	RF	B	T	BF	RF	B

VII. Abundance of Frigatebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile

VIII. Abundance of Flocks:

Total No. Flocks	Total No. Birds	Total No. F/Mi.	No. Feeding Flocks	No. Feeding Birds	No. Feeding F/MI.
<u>3</u>	<u>20</u>	<u>.02</u>	<u>1</u>	<u>7</u>	<u>.01</u>



SI-MNH-955a  
3-4-64

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA SURVEY CHART A

DATE: 23 May 64 Total Minutes: 793 Total Miles 136

I. Total Abundance of birds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>31</u>	<u>93</u>	<u>3.00</u>	<u>.68</u>

II. Abundance of the Shearwater-Petrel-Albatross Group:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	WT	P	B	T	WT	P	B	T	WT	P	B	T	WT	P	B
<u>23</u>	<u>13</u>	<u>-</u>	<u>2</u>	<u>73</u>	<u>61</u>	<u>-</u>	<u>2</u>	<u>3.17</u>	<u>4.69</u>	<u>-</u>	<u>1</u>	<u>.54</u>	<u>.45</u>	<u>-</u>	<u>.01</u>

III. Abundance of Tropicbirds:

No. Sightings			No. Birds			Birds/Sighting			Birds/Mile		
T	RT	WT	T	RT	WT	T	RT	WT	T	RT	WT
<u>1</u>	<u>-</u>	<u>-</u>	<u>1</u>	<u>-</u>	<u>-</u>	<u>1</u>	<u>-</u>	<u>-</u>	<u>.01</u>	<u>-</u>	<u>-</u>

IV. Abundance of Terns:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>8</u>	<u>18</u>	<u>2.25</u>	<u>.13</u>

V. Abundance of Shorebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>

VI. Abundance of Boobys:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	BF	RF	B	T	BF	RF	B	T	BF	RF	B	T	BF	RF	B
<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>

VII. Abundance of Frigatebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>

VIII. Abundance of Flocks:

Total No. Flocks	Total No. Birds	Total No. F/Mi.	No. Feeding Flocks	No. Feeding Birds	No. Feeding F/MI.
<u>2</u>	<u>47</u>	<u>.01</u>	<u>0</u>	<u>0</u>	<u>0</u>

SI-MNH-955a  
3-4-64

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA SURVEY CHART A

DATE: 24 May 64 Total Minutes: 798 Total Miles 124

I. Total Abundance of birds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>13</u>	<u>15</u>	<u>1.15</u>	<u>.12</u>

II. Abundance of the Shearwater-Petrel-Albatross Group:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	WT	P	B	T	WT	P	B	T	WT	P	B	T	WT	P	B
<u>12</u>	<u>3</u>	<u>1</u>	<u>-</u>	<u>14</u>	<u>3</u>	<u>1</u>	<u>-</u>	<u>1.17</u>	<u>1</u>	<u>1</u>	<u>-</u>	<u>.11</u>	<u>.02</u>	<u>.01</u>	<u>-</u>

III. Abundance of Tropicbirds:

No. Sightings			No. Birds			Birds/Sighting			Birds/Mile		
T	RT	WT	T	RT	WT	T	RT	WT	T	RT	WT
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IV. Abundance of Terns:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>1</u>	<u>1</u>	<u>1</u>	<u>.01</u>

V. Abundance of Shorebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
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VI. Abundance of Boobys:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	BF	RF	B	T	BF	RF	B	T	BF	RF	B	T	BF	RF	B
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VII. Abundance of Frigatebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
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VIII. Abundance of Flocks:

Total No. Flocks	Total No. Birds	Total No. F/Mi.	No. Feeding Flocks	No. Feeding Birds	No. Feeding F/MI.
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SI-MNH-955a  
3-4-64

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA SURVEY CHART A

DATE: 25 May 64 Total Minutes: 795 Total Miles 138

I. Total Abundance of birds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>7</u>	<u>7</u>	<u>1</u>	<u>.05</u>

II. Abundance of the Shearwater-Petrel-Albatross Group:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	WT	P	B	T	WT	P	B	T	WT	P	B	T	WT	P	B
<u>5</u>				<u>5</u>				<u>1</u>							

III. Abundance of Tropicbirds:

No. Sightings			No. Birds			Birds/Sighting			Birds/Mile		
T	RT	WT	T	RT	WT	T	RT	WT	T	RT	WT
<u>1</u>		<u>1</u>	<u>1</u>		<u>1</u>	<u>1</u>		<u>1</u>	<u>.01</u>		<u>.01</u>

IV. Abundance of Terns:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>1</u>	<u>1</u>	<u>1</u>	<u>.01</u>

V. Abundance of Shorebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile

VI. Abundance of Boobys:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	BF	RF	B	T	BF	RF	B	T	BF	RF	B	T	BF	RF	B

VII. Abundance of Frigatebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile

VIII. Abundance of Flocks:

Total No. Flocks	Total No. Birds	Total No. F/Mi.	No. Feeding Flocks	No. Feeding Birds	No. Feeding F/MI.



SI-MNH-955a  
3-4-64

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA SURVEY CHART A

DATE: 26 May 64 Total Minutes: 785 Total Miles 133

I. Total Abundance of birds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>16</u>	<u>19</u>	<u>1.19</u>	<u>.14</u>

II. Abundance of the Shearwater-Petrel-Albatross Group:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	WT	P	B	T	WT	P	B	T	WT	P	B	T	WT	P	B
<u>16</u>	<u>5</u>	<u>1</u>	<u>6</u>	<u>19</u>	<u>6</u>	<u>1</u>	<u>7</u>	<u>1.19</u>	<u>1.20</u>	<u>1</u>	<u>1.17</u>	<u>.14</u>	<u>.05</u>	<u>.01</u>	<u>.05</u>

III. Abundance of Tropicbirds:

No. Sightings			No. Birds			Birds/Sighting			Birds/Mile		
T	RT	WT	T	RT	WT	T	RT	WT	T	RT	WT
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IV. Abundance of Terns:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
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V. Abundance of Shorebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
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VI. Abundance of Boobys:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	BF	RF	B	T	BF	RF	B	T	BF	RF	B	T	BF	RF	B
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VII. Abundance of Frigatebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
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VIII. Abundance of Flocks:

Total No. Flocks	Total No. Birds	Total No. F/Mi.	No. Feeding Flocks	No. Feeding Birds	No. Feeding F/MI.
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SI-MNH-955a  
3-4-64

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA SURVEY CHART A

DATE: 27 May 64

Total Minutes: 772

Total Miles 129

I. Total Abundance of birds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>80</u>	<u>1192</u>	<u>14.9</u>	<u>9.24</u>

II. Abundance of the Shearwater-Petrel-Albatross Group:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	WT	P	B	T	WT	P	B	T	WT	P	B	T	WT	P	B
<u>76</u>	<u>26</u>	<u>31</u>	<u>11</u>	<u>483</u>	<u>414</u>	<u>43</u>	<u>11</u>	<u>6.36</u>	<u>15.54</u>	<u>1.39</u>	<u>1</u>	<u>3.75</u>	<u>3.21</u>	<u>3.33</u>	<u>.09</u>

III. Abundance of Tropicbirds:

No. Sightings			No. Birds			Birds/Sighting			Birds/Mile		
T	RT	WT	T	RT	WT	T	RT	WT	T	RT	WT
<u>2</u>			<u>2</u>			<u>1</u>			<u>.02</u>		

IV. Abundance of Terns:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>12</u>	<u>707</u>	<u>58.92</u>	<u>5.48</u>

V. Abundance of Shorebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
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VI. Abundance of Boobys:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	BF	RF	B	T	BF	RF	B	T	BF	RF	B	T	BF	RF	B

VII. Abundance of Frigatebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
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VIII. Abundance of Flocks:

Total No. Flocks	Total No. Birds	Total No. F/Mi.	No. Feeding Flocks	No. Feeding Birds	No. Feeding F/MI.
<u>11</u>	<u>1093</u>	<u>.09</u>	<u>9</u>	<u>1083</u>	<u>.07</u>

SI-MNH-955a  
3-4-64

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA SURVEY CHART A

DATE: 28 May 64 Total Minutes: 752 Total Miles 133

I. Total Abundance of birds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>65</u>	<u>800</u>	<u>4.62</u>	<u>2.26</u>

II. Abundance of the Shearwater-Petrel-Albatross Group:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	WT	P	B	T	WT	P	B	T	WT	P	B	T	WT	P	B
<u>62</u>	<u>16</u>	<u>35</u>	<u>2</u>	<u>182</u>	<u>97</u>	<u>52</u>	<u>2</u>	<u>2.94</u>	<u>6.06</u>	<u>1.49</u>	<u>1</u>	<u>1.37</u>	<u>.73</u>	<u>.39</u>	<u>.02</u>

III. Abundance of Tropicbirds:

No. Sightings			No. Birds			Birds/Sighting			Birds/Mile		
T	RT	WT	T	RT	WT	T	RT	WT	T	RT	WT
<u>2</u>	<u>2</u>	<u>-</u>	<u>2</u>	<u>2</u>	<u>-</u>	<u>1</u>	<u>1</u>	<u>-</u>	<u>.02</u>	<u>.02</u>	<u>-</u>

IV. Abundance of Terns:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>4</u>	<u>116</u>	<u>29</u>	<u>.87</u>

V. Abundance of Shorebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile

VI. Abundance of Boobys:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	BF	RF	B	T	BF	RF	B	T	BF	RF	B	T	BF	RF	B

VII. Abundance of Frigatebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile

VIII. Abundance of Flocks:

Total No. Flocks	Total No. Birds	Total No. F/Mi.	No. Feeding Flocks	No. Feeding Birds	No. Feeding F/MI.
<u>5</u>	<u>223</u>	<u>104</u>	<u>1</u>	<u>100</u>	<u>.01</u>



SI-MNH-955a  
3-4-64

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA SURVEY CHART A

DATE: 29 May 64 Total Minutes: 766 Total Miles 115

I. Total Abundance of birds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>72</u>	<u>643</u>	<u>8.93</u>	<u>5.51</u>

II. Abundance of the Shearwater-Petrel-Albatross Group:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	WT	P	B	T	WT	P	B	T	WT	P	B	T	WT	P	B
<u>66</u>	<u>25</u>	<u>38</u>	<u>7</u>	<u>320</u>	<u>126</u>	<u>83</u>	<u>7</u>	<u>4.85</u>	<u>5.04</u>	<u>2.18</u>	<u>1</u>	<u>2.78</u>	<u>1.10</u>	<u>.71</u>	<u>.06</u>

III. Abundance of Tropicbirds:

No. Sightings			No. Birds			Birds/Sighting			Birds/Mile		
T	RT	WT	T	RT	WT	T	RT	WT	T	RT	WT
<u>2</u>	<u>1</u>	<u>1</u>	<u>2</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>.02</u>	<u>.01</u>	<u>.01</u>

IV. Abundance of Terns:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>9</u>	<u>321</u>	<u>35.67</u>	<u>2.79</u>

V. Abundance of Shorebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile

VI. Abundance of Boobys:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	BF	RF	B	T	BF	RF	B	T	BF	RF	B	T	BF	RF	B

VII. Abundance of Frigatebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile

VIII. Abundance of Flocks:

Total No. Flocks	Total No. Birds	Total No. F/Mi.	No. Feeding Flocks	No. Feeding Birds	No. Feeding F/MI.
<u>12</u>	<u>560</u>	<u>.10</u>	<u>34</u>	<u>417</u>	<u>.03</u>

SI-MNH-955a  
3-4-64

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA SURVEY CHART A

DATE: 30 May 64 Total Minutes: 781 Total Miles 139

I. Total Abundance of birds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>23</u>	<u>31</u>	<u>1.35</u>	<u>.22</u>

II. Abundance of the Shearwater-Petrel-Albatross Group:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	WT	P	B	T	WT	P	B	T	WT	P	B	T	WT	P	B
<u>22</u>	<u>3</u>	<u>9</u>	<u>1</u>	<u>30</u>	<u>6</u>	<u>12</u>	<u>1</u>	<u>1.36</u>	<u>2</u>	<u>1.33</u>	<u>1</u>	<u>.23</u>	<u>.04</u>	<u>.09</u>	<u>.01</u>

III. Abundance of Tropicbirds:

No. Sightings			No. Birds			Birds/Sighting			Birds/Mile		
T	RT	WT	T	RT	WT	T	RT	WT	T	RT	WT
<hr/>											

IV. Abundance of Terns:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<hr/>			

V. Abundance of Shorebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<hr/>			

VI. Abundance of Boobys:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	BF	RF	B	T	BF	RF	B	T	BF	RF	B	T	BF	RF	B
<hr/>															

VII. Abundance of Frigatebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<hr/>			

VIII. Abundance of Flocks:

Total No. Flocks	Total No. Birds	Total No. F/Mi.	No. Feeding Flocks	No. Feeding Birds	No. Feeding F/MI.
<hr/>					

SI-MNH-955a  
3-4-64

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA SURVEY CHART A

DATE: 31 May 64

Total Minutes: 794

Total Miles 80

I. Total Abundance of birds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>17</u>	<u>22</u>	<u>1.29</u>	<u>.28</u>

II. Abundance of the Shearwater-Petrel-Albatross Group:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	WT	P	B	T	WT	P	B	T	WT	P	B	T	WT	P	B
<u>14</u>	<u>8</u>	<u>2</u>	<u>1</u>	<u>19</u>	<u>9</u>	<u>2</u>	<u>1</u>	<u>1.36</u>	<u>1.13</u>	<u>1</u>	<u>1</u>	<u>.24</u>	<u>.11</u>	<u>.03</u>	<u>.01</u>

III. Abundance of Tropicbirds:

No. Sightings			No. Birds			Birds/Sighting			Birds/Mile		
T	RT	WT	T	RT	WT	T	RT	WT	T	RT	WT
<u>2</u>	<u>1</u>	<u>1</u>	<u>2</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>.03</u>	<u>.01</u>	<u>.01</u>

IV. Abundance of Terns:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>1</u>	<u>1</u>	<u>1</u>	<u>.01</u>

V. Abundance of Shorebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
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VI. Abundance of Boobys:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	BF	RF	B	T	BF	RF	B	T	BF	RF	B	T	BF	RF	B

VII. Abundance of Frigatebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
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VIII. Abundance of Flocks:

Total No. Flocks	Total No. Birds	Total No. F/Mi.	No. Feeding Flocks	No. Feeding Birds	No. Feeding F/MI.
<u>1</u>	<u>5</u>	<u>.01</u>			



SI-MNH-955a  
3-4-64

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA SURVEY CHART A

DATE: 1 June 64 Total Minutes: 808 Total Miles 150

I. Total Abundance of birds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>9</u>	<u>9</u>	<u>1</u>	<u>.06</u>

II. Abundance of the Shearwater-Petrel-Albatross Group:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	WT	P	B	T	WT	P	B	T	WT	P	B	T	WT	P	B
<u>5</u>	<u>1</u>	<u>1</u>	<u>0</u>	<u>5</u>	<u>1</u>	<u>1</u>	<u>0</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>0</u>	<u>.03</u>	<u>.01</u>	<u>.01</u>	<u>0</u>

III. Abundance of Tropicbirds:

No. Sightings			No. Birds			Birds/Sighting			Birds/Mile		
T	RT	WT	T	RT	WT	T	RT	WT	T	RT	WT
<u>3</u>	<u>2</u>		<u>3</u>	<u>2</u>		<u>1</u>	<u>1</u>		<u>.02</u>	<u>.01</u>	

IV. Abundance of Terns:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>1</u>	<u>1</u>	<u>1</u>	<u>.01</u>

V. Abundance of Shorebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile

VI. Abundance of Boobys:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	BF	RF	B	T	BF	RF	B	T	BF	RF	B	T	BF	RF	B

VII. Abundance of Frigatebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile

VIII. Abundance of Flocks:

Total No. Flocks	Total No. Birds	Total No. F/Mi.	No. Feeding Flocks	No. Feeding Birds	No. Feeding F/MI.

SI-MNH-955a  
3-4-64

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA SURVEY CHART A

DATE: 2 June 64

Total Minutes: 828

Total Miles 150

I. Total Abundance of birds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>18</u>	<u>25</u>	<u>1.39</u>	<u>.17</u>

II. Abundance of the Shearwater-Petrel-Albatross Group:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	WT	P	B	T	WT	P	B	T	WT	P	B	T	WT	P	B
<u>15</u>	<u>2</u>	<u>1</u>	<u>7</u>	<u>22</u>	<u>6</u>	<u>1</u>	<u>7</u>	<u>1.47</u>	<u>3</u>	<u>1</u>	<u>1</u>	<u>.15</u>	<u>.04</u>	<u>.01</u>	<u>.05</u>

III. Abundance of Tropicbirds:

No. Sightings			No. Birds			Birds/Sighting			Birds/Mile		
T	RT	WT	T	RT	WT	T	RT	WT	T	RT	WT
<u>3</u>	<u>2</u>		<u>3</u>	<u>2</u>		<u>1</u>	<u>1</u>		<u>.04</u>	<u>.01</u>	

IV. Abundance of Terns:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile

V. Abundance of Shorebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile

VI. Abundance of Boobys:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	BF	RF	B	T	BF	RF	B	T	BF	RF	B	T	BF	RF	B

VII. Abundance of Frigatebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile

VIII. Abundance of Flocks:

Total No. Flocks	Total No. Birds	Total No. F/Mi.	No. Feeding Flocks	No. Feeding Birds	No. Feeding F/MI.

SI-MNH-955a  
3-4-64

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA SURVEY CHART A

DATE: 3 June 64 Total Minutes: 826 Total Miles 130

I. Total Abundance of birds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
65	352	5.42	2.71

II. Abundance of the Shearwater-Petrel-Albatross Group:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	WT	P	B	T	WT	P	B	T	WT	P	B	T	WT	P	B
38	12	2	6	154	82	2	6	4.05	6.83	1	1	1.18	.63	.02	.05

III. Abundance of Tropicbirds:

No. Sightings			No. Birds			Birds/Sighting			Birds/Mile		
T	RT	WT	T	RT	WT	T	RT	WT	T	RT	WT
8	1	4	8	1	4	1	1	1	.06	.01	.03

IV. Abundance of Terns:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
26	187	7.19	1.44

V. Abundance of Shorebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
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VI. Abundance of Boobys:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	BF	RF	B	T	BF	RF	B	T	BF	RF	B	T	BF	RF	B

VII. Abundance of Frigatebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
3	3	1	.02

VIII. Abundance of Flocks:

Total No. Flocks	Total No. Birds	Total No. F/Mi.	No. Feeding Flocks	No. Feeding Birds	No. Feeding F/MI.
9	272	.07	54	239	.03

SI-MNH-955a  
3-4-64

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA SURVEY CHART A

DATE: 4 June 64 Total Minutes: 816 Total Miles 128

I. Total Abundance of birds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>78</u>	<u>136</u>	<u>1.74</u>	<u>1.06</u>

II. Abundance of the Shearwater-Petrel-Albatross Group:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	WT	P	B	T	WT	P	B	T	WT	P	B	T	WT	P	B
47	12	2	15	63	18	2	18	1.34	1.50	1	1.20	.49	.14	.02	.14

III. Abundance of Tropicbirds:

No. Sightings			No. Birds			Birds/Sighting			Birds/Mile		
T	RT	WT	T	RT	WT	T	RT	WT	T	RT	WT
10	7	2	16	13	2	1.60	1.86	1	.13	.10	.02

IV. Abundance of Terns:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>23</u>	<u>55</u>	<u>2.39</u>	<u>.43</u>

V. Abundance of Shorebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
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VI. Abundance of Boobys:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	BF	RF	B	T	BF	RF	B	T	BF	RF	B	T	BF	RF	B
1		1		1		1		1		1		.01		.01	

VII. Abundance of Frigatebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
---------------	-----------	----------------	------------

VIII. Abundance of Flocks:

Total No. Flocks	Total No. Birds	Total No. F/Mi.	No. Feeding Flocks	No. Feeding Birds	No. Feeding F/MI.
<u>1</u>	<u>15</u>	<u>.01</u>	<u>1</u>	<u>15</u>	<u>.01</u>



1. 72 ' 1377

2. 30-23-2-9, 176-151-2-11

3. 1-0-0, 1-0-0, 1-0-0

4. 52-1090

6. 25-0-23-2, 104-0-102-2

7. 4-6

8.

SI-MNH-955a  
3-4-64

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA SURVEY CHART A

DATE: 5 June 64 Total Minutes: 376 Total Miles 73

I. Total Abundance of birds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>72</u>	<u>1377</u>	<u>19.13</u>	<u>18.88</u>

II. Abundance of the Shearwater-Petrel-Albatross Group:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	WT	P	B	T	WT	P	B	T	WT	P	B	T	WT	P	B
<u>30</u>	<u>23</u>	<u>2</u>	<u>9</u>	<u>176</u>	<u>151</u>	<u>2</u>	<u>11</u>	<u>5.87</u>	<u>6.57</u>	<u>1</u>	<u>1.22</u>	<u>2.41</u>	<u>2.67</u>	<u>.03</u>	<u>.15</u>

III. Abundance of Tropicbirds:

No. Sightings			No. Birds			Birds/Sighting			Birds/Mile		
T	RT	WT	T	RT	WT	T	RT	WT	T	RT	WT
<u>1</u>	<u>0</u>	<u>0</u>	<u>1</u>	<u>0</u>	<u>0</u>	<u>1</u>	<u>0</u>	<u>0</u>	<u>.01</u>	<u>-</u>	<u>-</u>

IV. Abundance of Terns:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>52</u>	<u>1090</u>	<u>20.96</u>	<u>14.93</u>

V. Abundance of Shorebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile

VI. Abundance of Boobys:

No. Sightings				No. Birds				Birds/Sighting				Birds/Mile			
T	BF	RF	B	T	BF	RF	B	T	BF	RF	B	T	BF	RF	B
<u>25</u>	<u>0</u>	<u>23</u>	<u>2</u>	<u>104</u>	<u>0</u>	<u>102</u>	<u>2</u>	<u>4.16</u>	<u>0</u>	<u>4.43</u>	<u>1</u>	<u>1.42</u>	<u>-</u>	<u>1.40</u>	<u>.03</u>

VII. Abundance of Frigatebirds:

No. Sightings	No. Birds	Birds/Sighting	Birds/Mile
<u>4</u>	<u>6</u>	<u>1.5</u>	<u>.08</u>

VIII. Abundance of Flocks:

Total No. Flocks	Total No. Birds	Total No. F/Mi.	No. Feeding Flocks	No. Feeding Birds	No. Feeding F/MI.
<u>13</u>	<u>1136</u>	<u>.18</u>	<u>12</u>	<u>1107</u>	<u>.16</u>



DATE 17 May 64  
Pg. # 1

time species # dir. hgt. remarks loc.

0830 begin observations

0900 Haw. Noddy 1

0905 " " 1

0906 W.T. Tropicbird 1

0907 W.T. Tropicb. 1

0907 Sooty Tern 1

0911 Haw. Noddy 1

0912 W.T. Tropicb. 1

0915 Hawaiian Noddy 2

0921 Wedgetail 3

0932 White-t. Tropicb. 7

0937 wedgetail 1

0938 " 1

0942 W.T. Tropicbird 1

1036 Wedgetail 1

1041 Sooty Tern 1

1043 Wedgetail 2

1127 Wedgetail 1

1136 Wedgetail 3 SE

1137 Sooty Shear 1 SE ✓

1138 Wedgetail 3 SE

1150 Wedgetail 1 SE

1152 Wedgetail 3 E

1154 Bulwers P. 2 E

1204 Wedgetail 1 W

1213 Bulwers P. 1 NE

1216 Bulwers P. 1 SE

1219 Wedgetail 1

1220 Shearwater/petrel 1

1221 Bulwers Petrel 3

1225 Bulwers P. 9

1227 Wedgetail 1

1228 Newell's Shear 2

over land

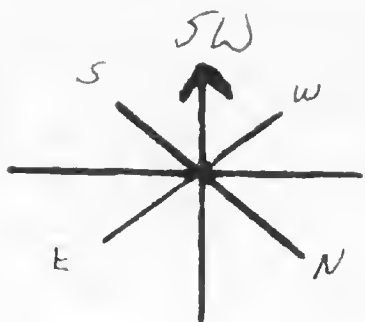
headed directly for cliffs  
flushed from water by approaching ship

around on cliff face

8 30  
4 22  
5 10  
0.5

seen by watch

moving flock - tight packed feeding?



DATE 17 May 64  
Pg. # 2

time species # dir. hgt. remarks loc.

1230	Wedgetail	1				
1229	WT Tropicbird	1				
1236	Bulwer's P.	9			feeding flock	
	Wedgetails	1				
1243	Bulwer's P.	1	N			
1248	Bulwer's P.	1	S			
1249	" "	8			feeding flock	
1255	" "	1	NW			
1259	Sooty Tern	1	NW			
1302	Bulwer's P.	1	N			
1305	" "	1	SE			
	wedgetail	1	NW			
1307	Bulwer's P.	1	S			
1309	" "	5				
1317	Common Noddy	1	S		(4 sitting in group)	
1323	Sooty Shear	1	NW			
	Wedgetail	2	S			
1325	Com. Noddy	2				
	Sooty Tern	80-100				
	wedgetail	50-60			feeding flock - one dark phase wedgetail	
	R.F. Booby	1	imm			
1326	Bulwer's P.	2	NW			
1330	Newell's Shear	1	SE			
1342	Bulwer's P.	1	E			
	Com. Noddy	1	E			
1414	R.F. Booby	1	adult			
1419	Bulwer's P.	2	NE		leading NE into flock	
1424	" "	1	N			
1430	flock to	5E	at 1 mile			
1445	flock to	5	at 1/2 mile+			
1448	Red-footed B.	3			now 5 Boobies in flock	
1449	Bulwer's Petrel	2				
1456	Wedgetail	2				
	Bulwer's P.	1			flying to join flock	
1500	flock swinging to NE					
1515	Sooty Tern	50				
	Wedgetail	50				
	Red-footed B.	2				
	Bulwer's	4				
	Newell's S. Noddy Tern	3				
		10			same flock as above	





DATE 17 May 64  
Pg. # 3

time species # dir. hgt. remarks loc.

1524 Wedgetails 1 NE headed toward rock  
Bulwers P 1

1526 Bulwers P 1 NE

1530 Bulwers P 2 S

1535 Bulwers P 1 S

1547 Bulwers P 1 S

1548 Sooty Tern 2 N

1551 Sooty Shear 1 N ✓ came within 100 yds. underwings only slightly lighter

1553 Sooty Tern 1 NE

1554 Bulwers P 1 S

1558 Sooty Shear 1 ✓  
Bulwers P. 1 NE

1600 Shearwater/  
Petrel 1

1601 Wedgetail 1

1607 Wedgetail 1 W

1614 Wedgetail 40-50 } feeding flock  
Sooty Tern 80-100

1616 Wedgetail 1 W

1631 " 1 W

1638 Wedgetail 15-20 } feeding flock  
Sooty Tern 30-40

1649 Bulwers P 1 SE

1652 Pet Shear 2 NE

1653 Wedgetail 1 S

1657 " 1 SE

1704 Newell's S. 1 NE

Bulwers P 1 N

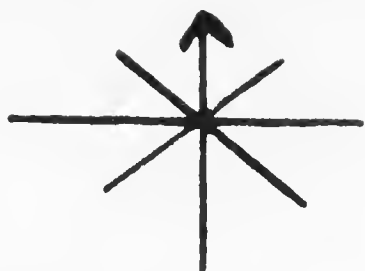
1705 Wedgetail 1 NE

1711 Sooty Tern 1 NE



DATE 17 May 64  
Pg. # 4

time	species	#	dir.	hgt.	remarks	loc.
1717	Bulwer's P	1				
1722	com. Noddy	1				
1724	Bulwer's P	1	SE			
1726	Bulwer's P	1	NE			
1727	Wedgetail	1	NE			
1732	Bulwer's P	1	SE			
1740	Bulwer's P	1	SE			
1745	Sooty Shear	1	NW			
1749	Bulwer's P	1	E			
1754	Dark-rump P.	1	NW			
1757	Sooty Tern	1				
1758	Bulwer's P	1	NE			
1800	Newell's S	1	N			
1802	Shear ?	1	N		large all dark - constant rowing wingbeats	
1803	Wedgetail	1	N		pointed wings	
1807	Sooty Tern	3	NE			
1815	Newell's S.	1				
	Wedgetail	1				
1820	Bulwer's P	4				
	Wedgetail	30			feeding flock	
	Sooty Tern	25				
1825	Sooty Tern	20				
	Wedgetail	50			feeding flock	
1828	Bulwer's P.	1				
	Sooty Tern	1				
1835	Sooty Tern	3				
1842	Wedgetail	1	N			
1848	Bulwer's P	2	N			
	wedgetail	1	N			
	sooty shear	1	N			
25 1855	Wedgetails	2	N			



DATE 17 May 64  
Pg. # 5

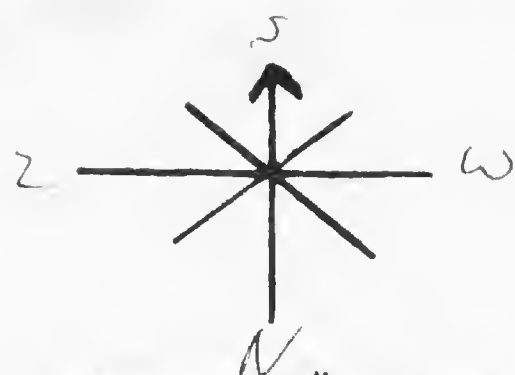
time species # dir. hgt. remarks loc.

1857 Sooty Tern 3 N

1902 end observations

136  
229  
253  
618

164  
60  
202  
2193  
629



DATE 18 May 64  
Pg. # 1

time species # dir. hgt. remarks loc.

0555 Sooty Tern 1 begin observation  
Wedgetail 1

0615 Shearwater/ 1  
petrel  
seen by watch

0655 Petrel SP 1 SE probably White-necked or Dark-rumped Petrel

0706 Sooty Shear 1 NW ✓  
Shearwater/ 2 E  
Petrel

0720 ~~Shearwater/~~ ~~petrel~~ ~~75 ± 25~~  
Flock  
Sooty Tern 75 ± 25  
Wedgetail 50 ± 10  
feeding

0745 Flock  
Sooty Tern 40 ± 10  
Wedgetail S. 50 ± 10  
Tropicbird sp 1  
feeding

0805 Wedgetail 2 E

0827 W-T. Tropicbird 1

~~0835~~ Sooty Tern 3 N

0858 Wedgetail 5 S

0904 Wedgetail 1 S

0907 Sooty Tern 2 SE

0928 Wedgetail 1 NW

0932 Sooty Tern 3 S

0943 Wedgetail 3 S

0950 Newell's S. 1 S

0955 Shearwater 1 S

1057 Shearwater/ 1 NW  
petrel

1126 Sooty Tern 15

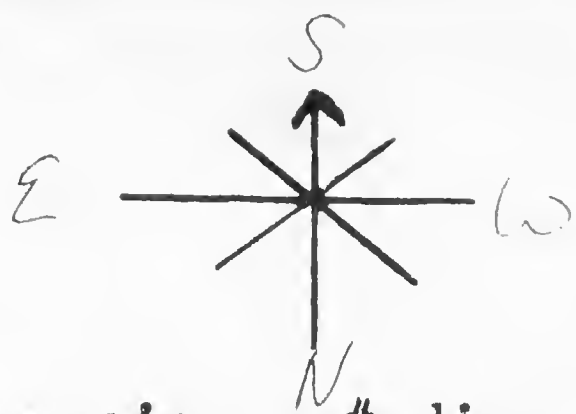
1138 Wedgetail S 1

1152 Sooty Shear 1 NW ✓

1137 Sooty Tern 1

1158 Sooty Tern 1 E

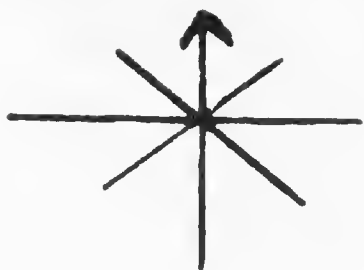




DATE 18 May 64  
Pg. # 2

time	species	#	dir.	hgt.	remarks	loc.
1216	Nowell's S.	1	NW			
1228	Harcourt's S.P.	1	S			
1259	Sooty Shear	1	NW			
1350	Shearwater	15			seen by watch in scattered flock; all flying close to water	
1357	Shear/Pet	1	S			
1402	Bulwer's P	1	NW			
1405	Sooty Tern	1	NW			
1424	Sooty Shear	3	NW			
1550	Sooty Tern	15			at least 1 immature	
	Wedgetail S	3		25-100ft	scattered flock	
1606	Shearwater/ Petrel	1	S			
1610	Wedgetail	2	SW			
1627	Sooty Shear	1	NW			
1645	Sooty Shear	1	NW			
1652	Sooty Shear	1	NW			
1731	Wedgetail	2	E			
1753	Bulwer's P	1	N			
1843	Wedgetail	1	N			
1850	Wedgetail	1	NW			
	Sooty tern	1	NW			
1905					end observation	

39  
123  
158  
320



DATE 19 May 64  
Pg. # 1

time species # dir. hgt. remarks loc.

0610 begin observations

0611 Sooty Shear 1 NW ✓

0620 Sooty Tern 1

Wedgetail 4

0622 Bonin's Petrel 1

0623 Harcourt's SP 1 S

0700 Harcourt's SP 1 W

0730 Red-tailed Tropicbird 1

0730 Shear/Pet 1 NW

0748 Sooty tern 1

Shearwater 10

Booby/Tropicbird 3

0750 Newell's S 2 S

0759 B-F. Booby 1 S

0810 Newell's S. 1 W

0817 Shearwater/Petrel 1 W

0829 Bulwer's P. 1 N

0834 Petrel sp. 4 N

Wedgetail S. 1

0842 Newell's S. 1 E

0850 Shearwater/Petrel 1 N

0855 Harcourt's SP 1 N

0905 Wedgetail 2 S

0906 Sooty Shear 2 NW ✓

0937 Sooty Shear 1 N ✓

0943 Sooty Shear 1 NW ✓

0950 Bulwer's P 1 N

0955 BF Booby 1 E

0959 Petrel sp 1 NW

in small flock

found on deck in good condition

flock at a very great distance  
called Booby sp.

imm

small - Bonin Is P. size - very fast flying, scaled  
to 25 ft + glided at near that height for several  
seconds - white underparts - light grey upperparts

small, Bonin-sized, way out  
small flock

seen by watch

sub adult

Brown upperparts - white head - mottled brown  
underwing with white spots - white belly -

18  
168  
177  
48  
411



DATE 19 May 64  
Pg. # 2

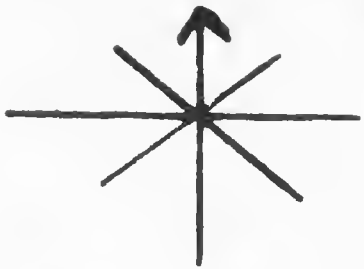
time	species	#	dir.	hgt.	remarks	loc.
1045	B-F Booby	1			subadult (seen earlier)	
1056	<del>Brown Booby</del>	1	W			
1107	Sooty Shear	1	NW	✓		
1123	Bulwer's P	1	N			
1153	Wedgetail	1	S			
1204	Wedgetail	4	E		scattered	
1220	Wedgetail	1	SE			
1245	Sooty Shear	1	NW	✓		
1250	Sooty Tern	1+				
	Shearwater	35			feeding	
	Petrel					
	Bulwer's P	1				
1253	Wedgetail	2	E		dark phase	
	Newell's S	1	E			
1302	B-F Booby	1	E		dark head-like first bird	
1310	Wedgetail	1			light - seen by watch	
1315	Wedgetail	1			dark	
1320	Wedgetail	1			dark sat on water	
1324	Wedgetail	1				
1328	Sooty Shear	2	NW	✓	light	
1342	Sooty Shear	2	NW	✓		
1345	Black-footed A	1	S			
1355	Sooty Shear	1	NW	✓	seen by watch	
1426	Wedgetail	2	SE			
1432	Sooty Shear	2		✓		
1440	Wedgetail	1	S			
1441	Newell's S.	2	SE			
1445	Sooty Shear	1		✓	by watch	
	Bulwer's P	1				
1450	Sooty Tern	5	SE		2 adults, 3 imm.	
1500	Sooty Tern	80-100 (ad + imm)			feed flock traveling SE	
	Wedgetail	15-20 (ad + imm)				
	Sooty Shear	4				
	Bulwer's P	1				
	B-F Booby	1	imm			





DATE 19 May 68  
Pg. # 3

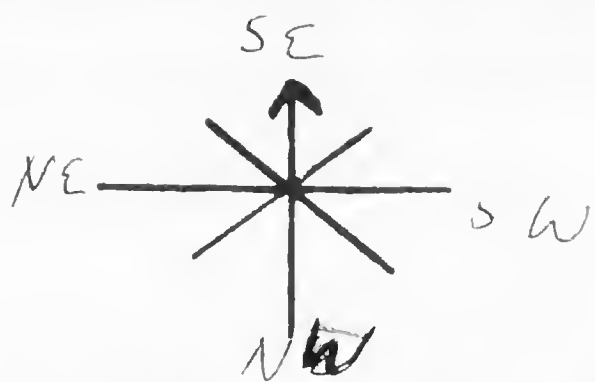
time	species	#	dir.	hgt.	remarks	loc.
1513	D-R Petrel	1	S		sitting on water in group 2 dark + 3 light	
	Wedgetail	5	S			
1529	Sooty Shear	1	NW	✓		
	Bonin Is. Petrel	1	NW			
1602	Bonin Is. Petrel	1	W			
1603	Sooty Shear	1	NW	✓		
1608	Flock					
	Sooty Tern	100			light phase	
	Wedgetail	2				
	Fairy Tern	1				
1612	Sooty Shear	1	NE	✓	dark phase all headed after flock	
	Wedgetail	1	NE			
	Novell's S	2	NE			
	Bonin Is. P.	1	NE			
1621	Shearwater/ petrel	1	W			
1629	Bonin Is. P.	1	W			
1634	Shearwater/ petrel	1	SW			
1636	Novell's S.	1	SE			
1658	Bulwer's P.	1	N			
1702	Shearwater/ petrel	1	W		seen by watch	
1707	Sooty Shear	1	NW	✓		
1716	Bonin Is. P.	1	N			
1728	Pomarine Jaeger	1	N			
1730	shearwater/ petrel	1	W			
1756	B-F Booby	2	W		subadults	
1800	Sooty Tern	25-30			} flock feed	
	Wedgetail	10-15				
	Shearwater/F. tern	3				



DATE 17 May 64  
Pg. # 4

time	species	#	dir.	hgt.	remarks	loc.
1807	Wedgetail	3	N			
1819	White-Noddy	1	E			
1821	Newell's S.	2	S			
	Bonin Is. P.	1	S			
1832	Pet/Shear	3	SE			
1838	Bonin Is. Pet	1	SW			
1842	Harcourt's sp	1				
1844	Bonin Is. P.	1	SW			
1845	Newell's S	1	SE			
1848	Bulwer's P	1	E			
1850	Harcourt's sp	1	S			
1853	Newell's S	1	SE			
1907	White-Noddy	1	E			
1910	and observation					

37  
67  
68  
24  
213  
409



DATE 20 May 64  
Pg. # 1

time species # dir. hgt. remarks loc.

0605 begin observations

0610 Wedgetail 3 E light

0637 Shearwater 1 NE

0652 Petrel  
Bulwer's P. 1 ESE

0700 Sooty Tern 50

Wedgetail 75

~~Dark-rumped P~~ 1

B. F. Booby 1

Frigatebird 1

60 dark 15 light feeding

immature

0706 Wedgetail S. 1 S

dark

0712 Bonin Is. P. 2 N

0719 B. F. Booby 1 SE

imm.

0724 Bonin Is. P. 1 NW

0728 Bonin Is. P. 1 SW

0810 Wedgetail 1 S

dark phase

0822 Wedgetail 5 NE

3 dark, 2 light

0831 Wedgetail 2 S

dark

0835 Newell's S 1 S

0845 " 1

followed ship for short time off steam

0849 Shearwater 1

0849 Laid up 2 NW

0852 Bulwer's P. 1 NW

0858 White-neck P. 1 NW

0900 Hancock's SP. 1 NW

0919 Wedgetail 1 S

dark

0932 Shear/Pet 1 NW

0937 Wedgetail 1 E

dark

0942 Bulwer's P. 1 NW

0946 Wedgetail 2 N

dark

0947 Bulwer's P. 1 N

1000 Sooty Tern 75-100

Wedgetail 40-50

Tropicbird 1

feed flock

1005 Bonin Is. P. 1

1015 White-neck P. 1 NW

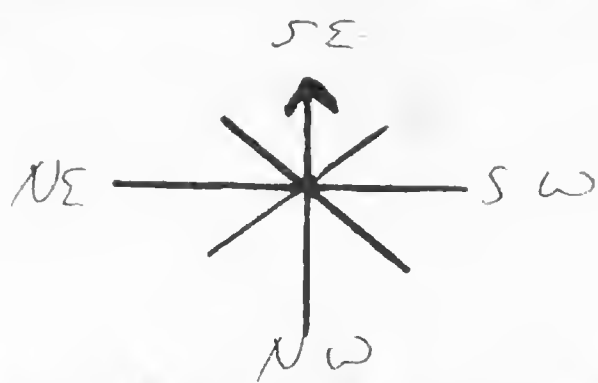
1019 Bonin Is. P. 1 SW

1025 Shear/petrel 1 NW

seen by watch

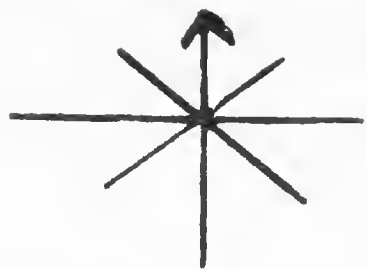


67  
235  
280  
582



DATE 20 May 64  
Pg. # 2

time	species	#	dir.	hgt.	remarks	loc.
1030	Wedgetail	1	SE		dark phase	
1032	Bulwer's P	1	NE			
1034	Newell's S.	1	S			
1054	Bulwer's P	1				
	Shearwater petrel	2				
1058	Bonin Is P.	1				
1058	Sooty Tern	10			small feeding flock	
1105	Wedgetail	1	NE		dark	
1120	Shearwater/ petrel	1			seen by watch	
1121	Newell's S.	1	E			
	Shearwater/ petrel	1	NE		seen by watch	
1148	Wedgetail	2	NE		dark	
1153	Bulwer's P.	1	SE		out on water	
1154	Wedgetail	1	E		dark	
1205	Tropicbird sp	1		100ft		
1220	Wedgetail S	1	NE		dark	
1237	White-necked Petrel	1	S		molting	
1255	Sooty Tern	100-125			} flock	
	Wedgetail	50-60				
	Tropicbird	1				
1257	Newell's S.	1	SE			
1307	White-necked P	2	SE			
1311	Wedgetail	1	SE		dark	
1313	Newell's S	1	SE			
1316	Wedgetail	3	SE		dark	
1346	White-necked	1	SW			
	Harcourt's P	1	SE			
1414	D.R. Petrel	1	SE			
	B-F. Sooty	1	E		adult subadult	
	Storm Petrel	2				
1415	Jarvis?	1				
1425	Bonin Is P	1				



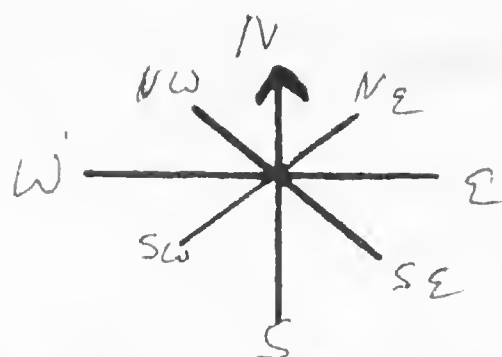
DATE 20 May 67  
Pg. # 3

time	species	#	dir.	hgt.	remarks	loc.
1445	Wedgetail	1	SE		dark	
1447	White-necked P.	1	SE			
1456	Newell's S.	1	S			
1520	Wedgetail S	1	SE		dark	
1525	Sooty Tern	25				
1525	Wedgetail	25			all dark	
	Petrel sp.	1			dark-rumped or white-necked P.	
	Frigatebird	1				
	Newell's S.	2				
1526	Harcourt's S.P.	1				
1528	White-necked P.	1	SE			
1530	Wedgetail	4	NW		dark - headed toward flock	
1531	Wedgetail	2	SE		dark	
1557	Harcourt's S.P.	1	SE			
1602	Blue-faced B.		same as before			
1617	Wedgetail S.	1	SE		dark	
1636	Sooty Tern	20			several immatures - turning toward adult plumage	
	Wedgetail	5			dark	
1656	Bulwer's P.	1				
1723	Shearwater	1	NW			
1730	Petrel sp.	1	N		brown upperparts - white underparts except dark underwings	
1732	Wedgetail	1	S		with white splotches in center - medium-sized & fairly chunky	
					dark	
1734	Dark-rumped P.	1	N		probably Arminjoniana	
1735	Bonin Is. Petrel	1	S			
1750	Harcourt's S.P.	1	E			
1754	Wedgetail	1	N		dark	
1759	Wedgetail	2	N		dark	
1806	Wedgetail	1	NE		dark	
1807	Harcourt's S.P.	1	E			
1841	Harcourt's S.P.	1	E			
1855	end observation					

68  
235  
280  
583

107  
195  
282  
584





DATE 21 May 64  
Pg. # 1

time species # dir. hgt. remarks loc.

0610 begin observations

0625 Shear/Pet 1 W

Petrel 1 W

0632 Newell's S 1 NE

Shearwater 1 E

0634 Wedgetail 1 E

0642 Storm Petrel 1

0651 White-Ned. P. 1 W

0713 Bonin Is. P. 1 W

0723 Bonin Is. P. 2 W

0803 Bonin Is. P. 1 W

0821 Sooty Tern 1 E

0825 Bonin Is. P. 1 W

0831 Harcourt's S.P. 1 W

0833 Sooty Shear. 1 NW

0859 Wedgetail 1 S

0912 White-t. Tropicb. 1 W

0918 Bonin Is. Petrel 1 W

0932 Bonin Is. Petrel 1 N

1029 Bonin Is. Petrel 1 W

1049 Bonin Is. Petrel 1 W

1338 Shearwater/ 1 S

1358 Petrel 1 W

1406 Tern sp 1

one large turtle seen

1630 Bonin Is. P. 2 W

1645 Shear/Pet 1 W

1810 Dark-rumped P. 1 E

1845 Christmas Is. S. 1 W

1910 end observations

dark upper breast, white underwing linings  
bordered by narrow black ~~dark~~ edgings, dark-rumped  
size or slightly smaller.

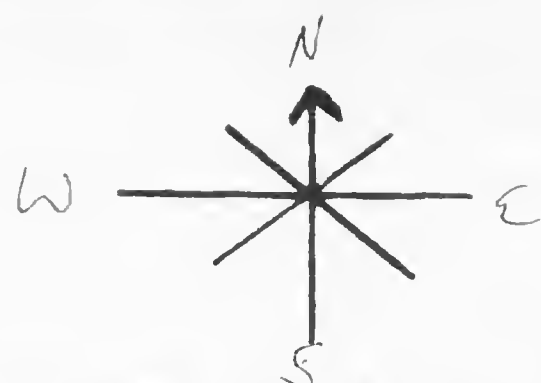
flushed from water  
light phase

seen by watch



DATE 22 May 64  
Pg. # 1

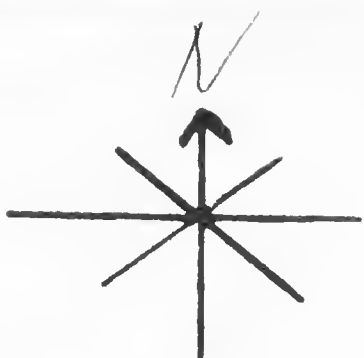
time	species	#	dir.	hgt.	remarks	loc.
0545	begin observations					
0640	Wedgetail	1	Σ		light phase	
0815	R-T Tropicbird	1	N		adult, but lacked red retrices; some gray	
0835	Storm Petrel?	1	W		on head + back — bill red	
1037	Wedgetail	5+	NW		scattered flock may have been same kind as seen last cruise but distance prevented better look + small small flock, probably not feeding	
	Pink footed ??	1				
1115	Sooty Tern	7				
1127	Bulwer's P.	2	NW			
1131	Wedgetail	1			dark-bird landed on water	
1223	Newell's S	1	N			
1317	Bulwer's P	1	N			
1446	Sooty Tern	5			small feeding flock	
	Shearwater/ Petrel	2				
1516	Bulwer's P	1	N			
1545	White-t. Tropicbird	1	N			
1637	Storm Petrel	1				
1652	Wedgetail	1	N		light	
1856	Wedgetail	1	Σ		light	
1840	Bulwer's P	1	NW			
1745	Wedgetail	1	NW		light	
1818	Bulwer's P	1	W			
1855	end observations					



DATE 23 May 64  
Pg. # 1

time species # dir. hgt. remarks loc.

0600	begin observations					
0710	Wedgetail	2	N		light phase	
0730	Sooty Tern	1				
0737	Harcourt's	1	NW			
0745	Sooty Tern	1	NW			
0802	Wedgetail S.	1	NW		light	
0821	Sooty Tern	5	NE		tail	
0906	Shearwater/ petrel	1	S			
0931	Wedgetail	2	E		light	
0932	Harcourt's sp.	1	W			
1040	Wedgetail	1	S		light	
	Bulwer's P	1	S			
1132	Wedgetail	2	W		light	
1147	Wedgetail	2	S		light	
1214	Wedgetail	3	S		light	
<del>1218</del>	<del>Wedgetail</del>	<del>2</del>			<del>light</del>	
1225	Sooty Tern	2	WSE		light	
1311	Wedgetail	1	W		light	
1322	Wedgetail	3	NW		light	
1344	Wedgetail	40	}		dark phase	
	Sooty Tern	2				
<del>1400</del>	Wedgetail	2	E		light	
1350	<del>Wedgetail</del>					
1406	Harcourt's sp.	2	E			
1450	Sooty Tern	3	cc			
1507	Sooty Tern	3	W			
1520	Storm Pet/Bulwer	1	E			
1607	Sooty Shear	1	NW	✓		
1615	Wedgetail	1	S		light	
1625	Sooty Shear	1	NW	✓		
1625	Shear/pet	1				
1634	Sooty Tern	1	SW			
1637	Tropicbird sp	1				
1654	Wedgetail S.	1	W			
	<del>Tropicbird</del>	1				
	Pomarine Jaeger					
1754	Bulwer's P	1	W		larger than Wedgetail - heavier - dark underwing - white underparts - upperparts brown - nose white - some white about head. Fanned Tail when attracted by Wedgetail	



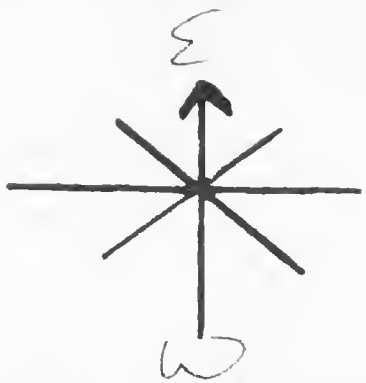
DATE 23 May 64  
Pg. # 2

time species # dir. hgt. remarks loc.

1827 Newell's S. 1 S

1900 end observation





DATE 24 May 64  
Pg. # 1

time species # dir. hgt. remarks loc.

0550 begin observations

0530 Black footed  
Albatross 1 seen by watch

0900 ~~Black footed~~  
Harcourt's sp. 1 E

1030 Wedgetail 1 N

1130 Black-footed  
Albatross 2 light  
"pirated" from tug + barge headed SW

1156 Harcourt's S.P. 1 SW

1504 Harcourt's S.P. 1 NE

1608 Harcourt's sp. 1 NE

1752 Sooty Shear 2 NW

1758 Harcourt's S.P. 1 E

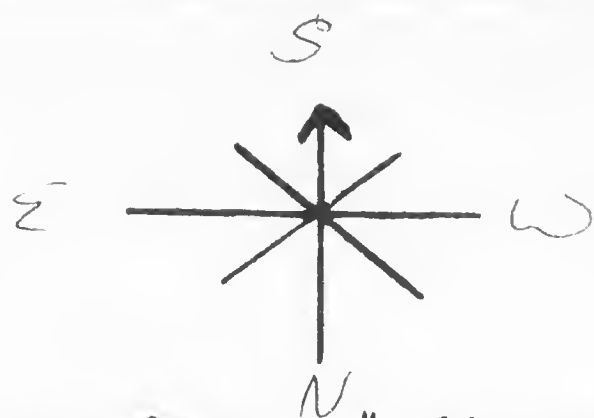
1812 ~~J.F.P.~~  
Dark-winged P. 1 E

1816 Wedgetail 1 W dark phase

1828 Sooty Tern 1 NW

1830 Wedgetail 1 NW

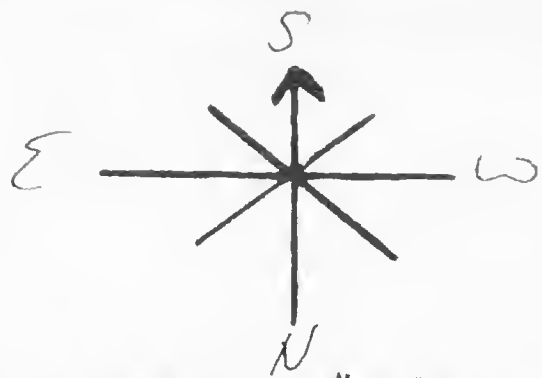
1830 Black-footed A. 1  
1900 end observations



DATE 25 May 64  
Pg. # 1

time species # dir. hgt. remarks loc.

0515	R-T Tropicbird	1				
0610	begin observations					
0610	Sooty Tern	1				
1148	W-T. Tropicbird	1	S		adult	
1255	Harcourts S.P.	1	W			
1306	Harcourts sp	1	SW			
1414	Sooty Shear	1	NW			
1523	Harcourts sp	1	S			
1823	Newells S.	1	N			
1845	end observations					



DATE 26 May 64  
Pg. # 1

time species # dir. hgt. remarks loc.

0600 begin observations

0635 shear/petrel 1 NW

0807 Bulwer's P 1 SE

0817 Bulwer's P 1 W

Wedgetail 2 W

0827 Harcourt's sp 1 NW

0845 Bulwer's P 1 NW

1032 Wedgetail 1

1036 Harcourt's S.P. 1 SE

1415 Wedgetail 1 S

1506 Harcourt's S.P. 1 W

1525 Bulwer's P. 2 E

1625 Bulwer's P. 1 N

1657 Bulwer's P 1 W

1726 Shear/Pet 1 NW

1825 ~~JFP~~ Dark-rumped K 1 W

1830 Wedgetail 1 E

1840 Wedgetail 1 S

1845 end observations

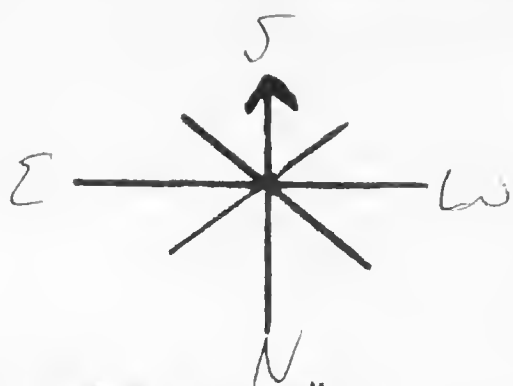
off steam

light

dark - seen by watch

dark phase

dark  
sunset  
light

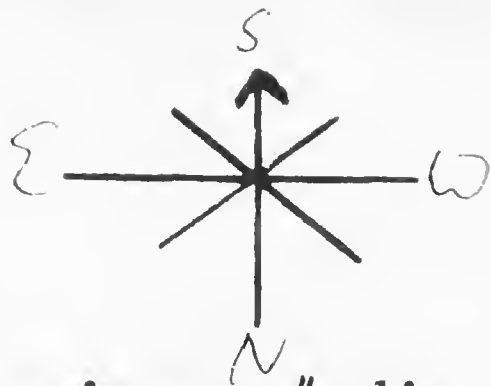


DATE 27 May 64  
Pg. # 1

time species # dir. hgt. remarks loc.

0500	begin observations					
0505	Shear/Pet	1	SE			
0520	Wedgetail	2	S		light	
0549	Wedgetail	12			small feeding flock; some resting on water; all light phase.	
0557	Bonin Is. P.	1	NW			
0602	Bonin Is. P.	1	SE			
0605	Wedgetail	2	S		light	
0612	Bulwers P	1	N		by watch	
0627	Wedgetail	1	W		light	
0634	Tropicbird	1	NE		no retrices — red-tailed body shape	
0639	Bulwers P	1	SE			
0644	Petrel	1	NW			
0711	D.R. Petrel	1	NW			
0720	D.R. Petrel	2			} scattered — following ship. No flock	
	Wedgetail	4				
0829	Wedgetail	1			light	
0846	Sooty Tern	5			} small feeding flock	
	<del>Shear/Pet</del> Wedgetails	5				
0847	Bulwers P	1			light	
	Wedgetail	2				
0900	Wedgetail	7			not in flock	
0901	pl. Petrel sp	1				
0910	Wedgetail	1	light		dark-almost black, white flecks under wings heavy molt. ? sitting in water following ship	
	White-necked P.	1				
0930	White-necked P.	1			heavy molt seemed to fly unwillingly — chased with ship & fired at close range 3 times but missed on water — fired once heavy molt	
0935	White-necked P	2				
0940	White-necked P	1				
	Bulwers P	1				
1015	Bonin Is P	1	NW			
1023	Shear/Pet	1				
1044	<del>Petrel</del>	1	N		D-R or W-P	
1052	Shear/Pet	1				
1100	Sooty Tern	20 ± 25			} feeding flock	
	Wedgetail	100 ± 25				





DATE 27 May 64  
Pg. # 2

time	species	#	dir.	hgt.	remarks	loc.
1105	DR Petrel	1	NE		<del>molting</del> molting	
1115	Sooty Tern	140 ±25			} feeding flock	
	Wedgetail	80 ±15				
	DR Petrel	3				
	Bulwer's P	1				
1120	Sooty Tern	70 ±10			} feeding flock	
	Wedgetail	40 ±10				
	DR Petrel	2				
1140	Sooty Tern	50 ±5			} feeding	
	Wedgetail	30 ±10				
1142	Hairy Tern	1	N			
1153	DR Petrel	1	W			
1157	W-N Petrel	1	W			
	Wedgetail	1	SW			
1209	Hannouls sp	1	N			
1227	Sooty Tern	2	N		1 immature	
1245	Sooty Tern	100 ±25			} feeding flock	
	Wedgetail	50 ±25				
1246	Bulwer's P	1	N			
1250	Bulwer's P	1	E			
1254	Bonin Is P.	1	NW		came close, fired, close but missed	
1256	Sooty Tern	3	NE			
1302	Wedgetail	1	E		seen by watch	
1312	Shear/petrel	1	S			
1316	Wedgetail	1	E		scaling well above horizon but too far away	
1318	Dark-rumped P	1	SE			
1320	Sooty Tern	1			sitting in water - molting	
1335	Dark-rumped P	3			} sitting on water, molting	
	White-necked P	1				
	Petrel sp	1				
1337	Wedgetail	4			petrel medium sized all dark chunky	
	Petrel sp	1			right	
1339	Dark-rumped P	1			all dark medium chunky	
					molting	
1349	Dark-rumped P	1			molting	



DATE 27 May 64  
Pg. # 3

time species # dir. hgt. remarks loc.

1345 Sooty Tern 125 ± 25  
Wedgetail 50 ± 25  
~~Shear/petrel~~

feeding flock

1350 Tropicbird sp. 1  
1400 Wedgetail 1

1406 Shear/petrel 1  
1415 Sooty Shear 1 NW  
1418 Sooty Tern 10  
Wedgetail 10  
~~Shear/petrel~~

} scattered, but feeding flock

1425 Bulwers P. 1  
seen by watch

1426 Shear/petrel 1  
seen by watch

1428 Shear/petrel 3 W

1430 Harcourts S.P. 1 S

1438 Wedgetail 1 S

light

1443 Brown Is. P. 1 NW

molting

1450 Bulwers P. 1 W

1458 Shear/petrel 1 W

1525 Bulwers P. 1 S

1535 Wedgetail 1

1553 Storm Petrel 1

~~1643 DR Petrel~~

1643 DR Petrel 1 S

1707 DR Petrel 1 W

1715 DR Petrel 1 W

Bonins Is. P. 1 W

} sitting together on water

1719 DR Petrel 1 SE

resting in water

1735 Bulwers P. 1 N

1740 Shear/petrel 1

1745 Wedgetail 1 NW

light

1750 Wedgetail 2 S

light

1805 Dark-rumped P. 1 NW

1820 Dark-rumped P. 1 SW

molting

Bonin Is. P. 1

1826 Wedgetail 4 S

light

1832 Dark-rumped P. 1

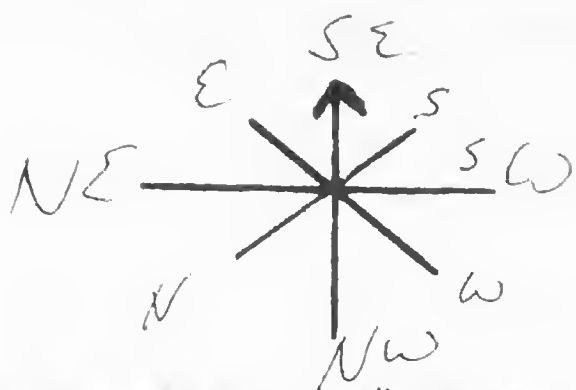
1835 Dark-rumped P. 1

molting

1745 and observation

364  
597  
231  
1192

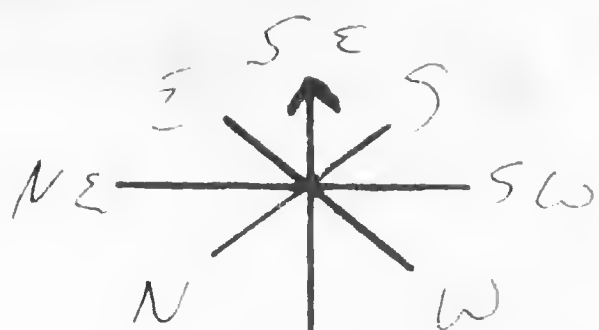
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11  
11  
24  
414  
706  
1192



DATE 28 May 64  
Pg. # 1

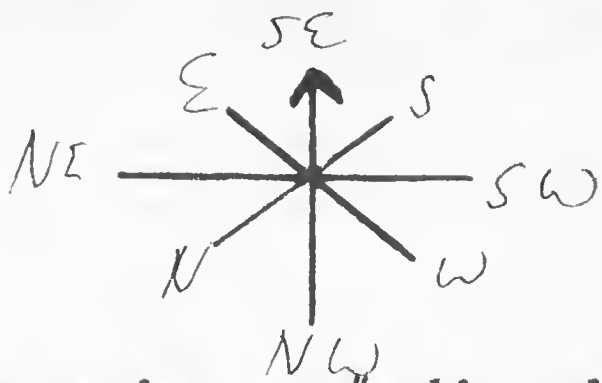
time	species	#	dir.	hgt.	remarks	loc.
0530	shear/petrel	1			seen by watch	
0540	begin observation					
0600	shear/petrel	3			seen by watch	
0620	Sooty Tern	1	NW			
0629	Dark-rumped P.	1	SE			
0632	White-necked P	1				
	Wedgetail	1	W		dark	
0638	Wedgetail	1	S		dark	
0645	shear/petrel	2				
0716	Bonin Is Petrel	1	W			
0720	Bonin Is P.	1	W			
0754	Petrel/shear	1				
0804	Red-tailed Tropicbird	1			overhead - adult	
0811	DR Petrel	1	N			
0820	Bonin Is P	1	NW			
	Shear Pet	1	NW			
0821	R-L-T. Tropicbird	1	N		adult	
0840	DR Petrel	1	NW			
0845	Wedgetail	1	S		dark	
0851	Harcourt SP	1	SE			
0855	Petrel	1	NW			
0859	Petrel	1	SE			
0904	DR Petrel	1	NW			
	Wedgetail	1	NW		dark	
0910	Bonin Is P	1	NW			
0915	Wedgetail	2	SW		dark	
	Newell's S	1	SW			
0916	Wedgetail	1	SW		dark	
0920	DR Petrel	1	S			
0923	DR Petrel	2	NW			
	Bonin Is P	1	NW			
0925	DR Petrel	1	SW			
0928	Harcourt SP	2	SE			
0936	DR Petrel	1	S			
0940	DR Petrel	1	S			
0950	DR Petrel	3	S			
0958	Newell's S	1	WN		on water	
	Wedgetail	1	SE		dark	
1000	Wedgetail	20	SW		dark	
1005	Harcourt SP	1				
1010	Harcourt SP	1	NW			





DATE 28 May 64  
Pg. # 2

	time	species	#	dir.	hgt.	remarks	loc.
JFP	1019	DR Petrel	1	SE			
JFP	1040	DR Petrel	1	W			
		Wedgetail	5	W		dark	
JFP	1041	Bonin's P.	1	W			
JFP	1054	W-H Petrel	1	NW			
	1105	Wedgetail	30	±5		all dark	
JFP		Dark-rumped P.	12	±2		1 fired upon by Bratley, but not brought down	
		Sooty Tern	5				
		Newell's S.	1				
		Shear/petrel	2				
	1115	Wedgetail	1			dark	
	1136	Bulwer's P.	1	NW		N	
JFP	1140	Dark-rumped P.	1	SE			
		Wedgetail	1	SE		dark	
	1155	Harcourt's S.P.	1				
JFP	1203	Bonin's P.	1	NW			
	1211	Harcourt's SP	1	SE			
	1212	Wedgetail	1	SW		dark	
	1220	Harcourt's SP	1	SE		fired upon	
JFP	1225	Bonin's P.	1	SE			
JFP	1238	Dark-rumped P.	1	SE			
JFP	1315	D-R Petrel	1	NE			
	1340	Shear/Pet	2			by watch	
	1345	Shear/Pet	1			"	
	1416	Sooty Tern	35 ±2	NE		at least 1 immature	
		Wedgetail	10 ±2			not feeding	
		Dark-rumped P.	2+				
JFP	1456	Sooty Tern	75 ±15				
		Wedgetail	20 ±5			feeding flock	
JFP		White-headed P.	1				
		Shear/petrel	4				
	1518	Shear/petrel	1				
	1522	Shear/petrel	1				

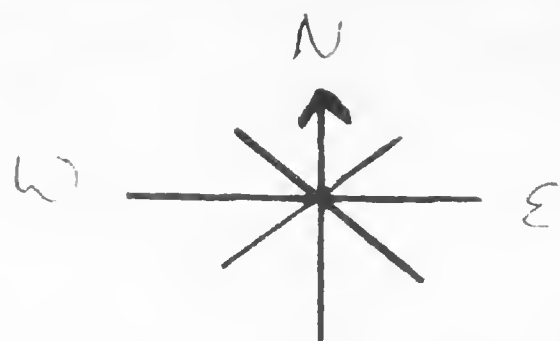


DATE 28 May 64  
Pg. # 3

	time	species	#	dir.	hgt.	remarks	loc.
REP	1552	White-necked P.	1			sitting in water	
REP		Dark-rumped P.	1				
	1553	Harcourt's SP	1				
	1621	Wedgetail	1	SE		light!	
REP	1626	Dark-rumped P.	1	SE			
REP	1640	Dark-rumped P.	1	SE			
REP	1645	Dark-rumped P.	1	E			
REP	1705	Dark-rumped P.	1	SE			
	1747	Bulwers P.	1	NE			
REP	1806	Bonin Is P.	1	NE			
	1820	end observations					

67  
223  
10  
300

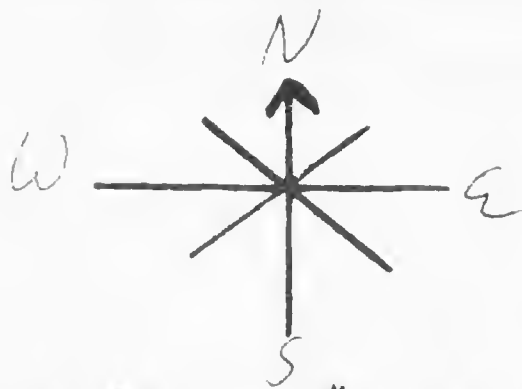
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 97 \\
 19 \\
 37 \\
 \hline
 116 \\
 300
 \end{array}$$



DATE 29 May 64  
Pg. # 1

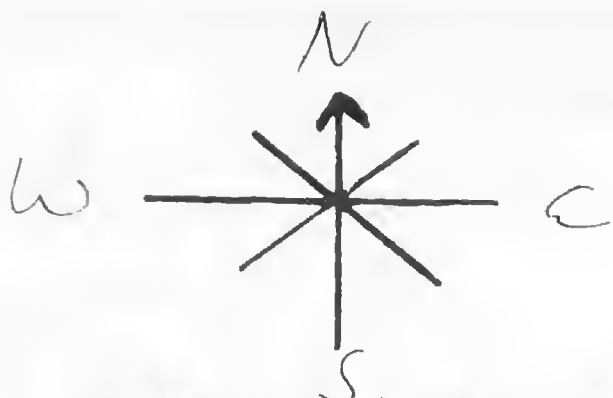
	time	species	#	dir.	hgt.	remarks	loc.
	0515	begin observations					
JFP	0515	DR Petrel	2	W			
	0525	Wedgetail	50			sitting - dark & light - watch	
	0526	Wedgetail	5	N		dark & light	
	0535	Sooty Tern	1	N			
	0555	Wedgetail	4	N			
JFP	0557	DR Petrel	1	S			
	0559	Wedgetail	2	Z		dark	
JFP	0602	DR Petrel	1	W			
BWP	0606	Bonin Is P.	1	W			
	0615	Sooty Tern	1	SW			
	0623	Wedgetail	1	W		dark	
	0630	Sooty Tern	40	SW		} feeding flock	
		Wedgetail	15	SW			
JFP	0631	DR Petrel	3	E			
	0634	Newell's S	1	W			
BWP	0637	Bonin Is P.	1	W			
	0645	Wedgetail	1	SE		dark	
	0730	Wedgetail	6	S		scatter over 360° - dark	
	0740	W-T Tropicbird	1			adult	
JFP	0757	Bonin Is P.	1	W			
BWP	0800	Bonin Is P.	1	W			
	0800	Wedgetail	3			travelling flock	
JFP		Dark-rumped P.	6				
P. ex		White-necked P.	1				
		Harcourt's S.P.	1				
	0816	Petrel sp	1				
JFP	0819	Dark-rumped P.	3	W		} travelling	
		Wedgetail	1				
		Shear/petrel	1				
P. ex	0820	White-necked P.	1				
P. ex		Petrel sp	1	W		W on DR	
JFP	0840	Dark-rumped P.	1	SW			
	0840	Wedgetail	1				
	0842	Petrel sp	2			light	
JFP	0850	Dark-rumped P.	1	SW		sitting in water	
	0852	Wedgetail	11			sitting on water	
P. ex	0858	White-necked P.	1	SW			





DATE 29 May 64  
Pg. # 2

	time	species	#	dir.	hgt.	remarks	loc.
Pet	0855	White-necked P	1	W			
	0902	Petrel sp	1	W			
	0905	Bulwers P	1	W			
BWP		Bonin Is P.	1	W			
JFP	0907	Dark-rumped P	3				
Pet		White-necked P	1	W		} travelling	
BWP		Bonin Is P.	1				
	0910	Shear/petrel	1	E		sitting on water	
Pet	0913	White-necked P	1	W			
	0920	Wedge tail	1	W		dark	
BWP		Bonin Is P	1				
	0925	Wedge tail	2			dark	
JFP	0926	Dark-rumped P	1				
Pet		White-necked P	1	W		sitting in water	
	0928	Shear/petrel	1	E			
JFP	0935	Dark-rumped P	1				
		Newell's S.	1				
Pet	0950	White-necked P	1				
		Petrel sp.	1	W			
	0958	Wedge tail	1	E		dark	
	1000	Wedge tail	1	NW		dark	
JFP		Dark-rumped P.	1	NW			
JFP	1014	Dark-rumped P	1	S			
	1015	Shear/Pet	1				
JFP	1030	Dark-rumped P	3	N			
JFP	1103	Dark-rumped P	10			} small feeding flock	
		Wedge tail	2	(dark)			
JFP	1109	Dark-rumped P	2	W			
Pet	1201	White-necked P	1	SW			
	1240	Bulwers Petrel	1	W			
	1248	Sooty Tern	25				
		Wedge tail	10			dark	
JFP		Dark-rumped P	12	N		travelling - some sat in water	
Pet		White-necked P	2				
		Newell's S.	1				



DATE 29 May 64  
Pg. # 31

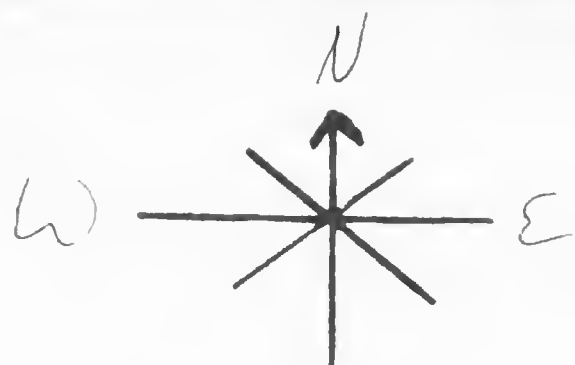
	time	species	#	dir.	hgt.	remarks	loc.
JFP	1306	Sooty Tern	200 ± 50			<div> <div> <div>dark</div> <div>feeding flock</div> </div> </div>	
		Shear/petrel	70 ± 20				
		Newell's S	1+				
		Bulwers P.	1+				
		Wedgetail	1+				
		Dark-rumped P.	2+				
		<del>Shearwater/petrel</del>					
	1315	Bulwers P	1	NW			
	1320	Sooty Tern	2	NE		1 immature	
	1321	Bulwers P.	1	NW			
JFP	1324	Dark-rumped P	1	N			
	1331	Bulwers P	1	NW			
BWP	1332	Bonin Is P.	1	NW			
PAP	1335	White-headed P.	1	SE			
	1342	Wedgetail	1	E			
JFP	1349	Dark-rumped P	1	S			
	1400	Bulwers P.	1	S			
	1416	Wedgetail	1	NW		dark	
	1425	Sooty Tern	1				
BWP	1428	Bonin Is P.	1	W		sitting on water	
	1526	Wedgetail	1	S		light	
	1648	Wedgetail	1	S		light	
	1655	Wedgetail	1	S			
		Sooty Tern	1	⊙			
	1705	Wedgetail	3	E		light	
	1732	Sooty Tern	50 ± 25			feeding, then raising	
		Shearwater/petrel	25 ± 15				
	1827	R-T Tropic bird	1				
	1830	end observations					

$$\begin{array}{r}
 29 \\
 56 \\
 12 \\
 99 \\
 126 \\
 \hline
 2321 \\
 643
 \end{array}$$

$$\begin{array}{r}
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 175 \\
 96 \\
 \hline
 643
 \end{array}$$

$$\begin{array}{r}
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 545 \\
 000 \\
 \hline
 55
 \end{array}$$

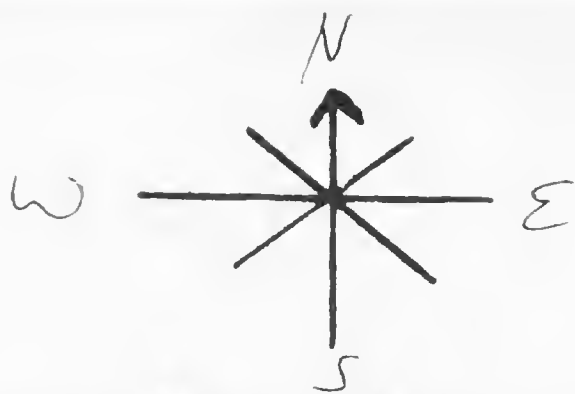
$$\begin{array}{r}
 414 \\
 52 \\
 528 \\
 21 \\
 55
 \end{array}$$



DATE 30 May 64  
Pg. # 1

time	species	#	dir.	hgt.	remarks	loc.
0520	begin observations					
0525	Bonin Is P.	1	NE			
0546	Shear/petrel	1	W			
0554	Bonin Is P	2	SW		seen by watch	
0602	Bonin Is P	1	S			
0657	Wedgetail	2	SE		light	
0808	Bonin Is. P.	1	S			
0845	D.R. Petrel	1	S			
0932	Bonin Is. P.	1	N			
1226	Bonin Is. P.	1	W			
1238	Shear/Pet	1	W			
1417	Shear/Pet	1	W			
1500	Shear/petrel	1	SW			
1512	Shear/petrel	1	W			
1515	Bonin Is P	3	W			
1523	Shear/petrel	3	SW			
1605	Wedgetail	1	SE		dark	
1606	Harcourt's S.P.	1	NW			
1623	Shear/Pet	1	W			
1635	D.R. Petrel	1	N			
1655	Shear/Pet	1	W			
1705	<del>Shear</del> Skua	1	SW		very large, <del>to</del> near booby size, all dark except white at base of primaries on underwing. Very heavy & chunky, short black tail (darker than rest of body). Short wings. Flew with slow stroke unlike any sea bird I've seen yet. Was sitting on water ahead of ship. When it flew, it went in SW direction. Mostly a <del>Skua</del> or giant petrel of some sort.	
1725	Bulwer's P	1	W			
1844	Wedgetail	3	SE		light	
1845	end observations					





DATE 31 May 64  
Pg. # 1

time species # dir. hgt. remarks loc.

0550 begin observations

0553 Wedgetail 1 N

0607 Wedgetail 1 SW

0610 Bonin's P. 1 W

0706 Wedgetail 2 N

0720 W-T Tropicbird 1 NE

0754 Bulwer's P 1 W

0830 Wedgetail 1

0905 Petrel Sp 1 W

0917 Shear/petrel 1 W

1045 ~~Harcourt's~~

1057 Wedgetail 1 N

1240 Wedgetail 1 S

1630 ~~Harcourt's~~ 1 E

1637 Wedgetail 1 N

1656 R-T Tropicbird 1 E

1659 Wedgetail 1 S

1815 Sooty Tern 1 SW

1835 end observations

following ship - light

light

watch

light - came aboard 0330 and caught by

watch. Released.

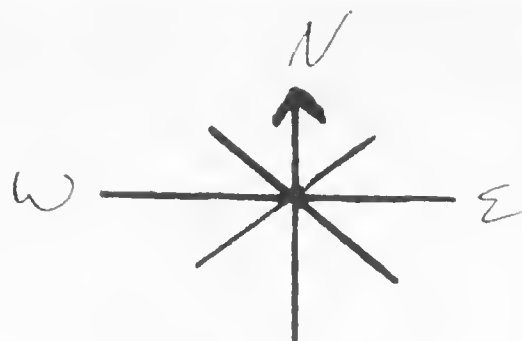
(light) { all sitting in group upon water, when flushed they scattered.

light buzzed ship several times

light

adult - very pink

light



DATE 1 June 64  
Pg. # 1

time species <sup>S</sup># dir. hgt. remarks loc.

0515 begin observations

0638 Shearwater/  
petrel 1 NW

sat on water

0805 ~~JEP~~ D-R. Petrel 1 N

not molting

0823 Sooty Tern? 1 N

by watch

0942 R-T Tropicbird 1 N

adult

1045 Wedgetail 1 S

1235 R-T Tropicbird 1 E

adult

1507 Tropicbird sp. 1

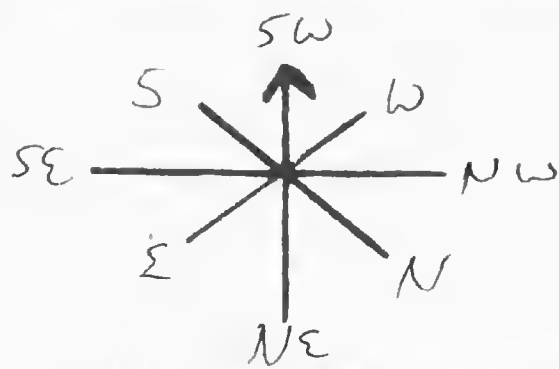
sat in water

1750 ~~Shearwater~~ Harcourts 1 W

1800 B-F Albatross 1

following ship

1845 end observations



DATE 2 June 64  
Pg. # 1

time species # dir. hgt. remarks loc.

0445 begin observations

0446 B-F. Albatross 1

following ship — different bird than one sighted last night; lacks the white ramp of yesterday's bird.

0500 R-T. Tropicbird 1 SE

adult

0745 shear/petrel 1

seen by watch

0951 Harcourt's S.P. 1

1007 Wedgetail 2 SW

light

1045 Bulwer's P. 1 S

1125 Bulwer's P. 1 NW

1135 R-T. Tropicbird 1 SW

without retinas

1246 Harcourt's S.P. 4

1302 Bulwer's P. 1 NE

sitting on + flying over small oil slick

1318 Bulwer's P. 1

sitting by glass ball

1504 Bulwer's P. 1 W

flapping constantly against wind

1527 Bulwer's P. 1 NE

1655 Bulwer's P. 1 SE

1754 Wedgetail 1 NE

light

1755 Black-footed 1

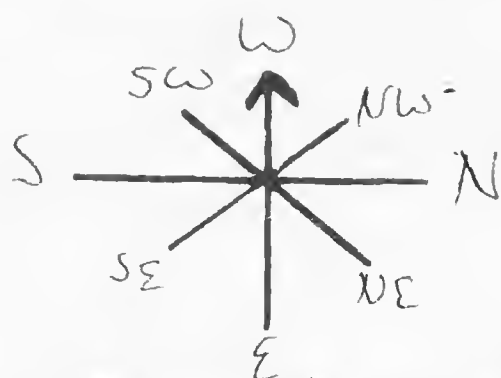
all dark

1816 Dark-rumped P. 1 NE

not molting

1841 Tropicbird sp. 1 SW

1850 end observations



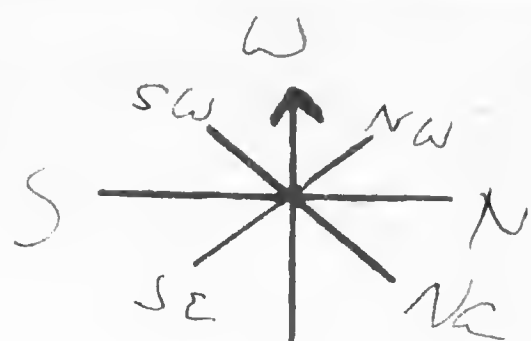
DATE 3 June 64  
Pg. # 1

time	species	#	dir.	hgt.	remarks	loc.
0520	Sooty Tern	1			seen by watch	
	Shearwater/petrel	1				
0535	begin observations					
0647	shear/petrel	1				
0650	Black-footed Albatross?	1			seen by watch at distance	
0707	Wedgetail	1	S		light	
0716	Sooty Tern	2	W			
0717	Harcourt's SP.	2	N			
0734	Wedgetail	1	E		light	
0740	White-T. Tropicbird	1			sitting on water	
0745	Sooty Tern	1	SE			
0808	Sooty Tern	2	E		adult	
0825	Sooty Tern	4	E		} small flock	
	Shear/Pet	2	E			
0845	W-T. Tropicbird	1	NW		adult flushed from water	
0911	Shear/Pet	1	S		watch	
0914	Newell's S.	1	N			
0923	Bulwer's P	1	NW			
0959	Sooty Tern	2	<del>SE</del> E			
1015	Sooty Tern	3	W			
1016	Shear/petrel	1	N			
1030	Sooty Tern	2	SE		1 immature	
1039	Wedgetail	1	W		following ship, light	
1040	Sooty Tern	5			scattered	
1044	Harcourt's SP	1	NW			
1105	Sooty Tern	1	E			
1109	Dark-rumped P	1	N		not molting	
1120	Sooty Tern	1	N			
1136	Sooty Tern	2	E			
1137	Wedgetail	1			light	
1140	Brown Is P?	1	N			
1144	Sooty Tern	2	E			
1149	White-tailed T.b.	1	NW		sitting on water	
1200	Bulwer's P.	1	E			



239  
63  
1.50  
352

33  
82  
50  
218.7  
352



DATE 3 June 64  
Pg. # 2

time species # dir. hgt. remarks loc.

1207	Wedgetail	1	W		light	
1208	Frigate	1	E	200ft	adult male	
1209	Wedgetail	2	E		light	
1212	Tropicbird sp	1	⊙	<u>300ft</u>	circling above frigate	
1244	Sooty Tern	8	Σ		2 immatures, 1 travelling	
1215	Black-footed A.	1			following 2 birds	
1216	Wedgetail	1	W		light	
1225	Storm Petrel	2				
1245	Tropicbird	1	100ft		♂ adult	
1303	Sooty Tern	6			travelling	
1312	Tropicbird	1				
1325	Tropicbird	1				
	Frigatebird	1	NE			
1350	Wedgetail	1	S		dark	
1355	Navell's	2	S			
1430	B-F Albatross	2				
1431	Wedgetail	50-60			} feeding flock	
	Sooty Tern	8-12				
1442	Wedgetail	1	W		light	
1454	Navell's S.	1	S			
1457	Wedgetail S.	2	Σ			
1458	Red-tail TB	1	Σ		adult with long retrices	
1500	Bulwer's P	1	E			
1506	Bulwer's P	1	S		fixed at but no hits although bird chood self	
1535	Sooty Tern	2	W	150ft	soaring, then dropped down & passed ship into wind	
1537	Bulwer's P.	1	Σ		passed under bow	1 immature
1555	Black-footed A.	3				
1608	Sooty Tern	3	NE			
1645	Sooty Tern	80 ± 20			} feeding flock	
	shearwater/petrel	40 ± 20				
1630	Sooty Tern	7			} small feeding flock	
	shearwater/petrel	4				
1705	Sooty Tern	8			small travelling flock at least 2 immatures	



DATE 3 June 84  
Pg. # 3

time species # dir. hgt. remarks loc.

1712 Sooty Tern 1 seen by watch

1720 Sooty Tern 1 SE

1750 Sooty Tern 30 ± 5

Wedgetail 20 ± 5

one dark } feeding flock

1800 Sooty Tern 4 N

Storm Petrel 1

1815 Bulwer's 1 W

1853 W-T Tropicbird 1 NE

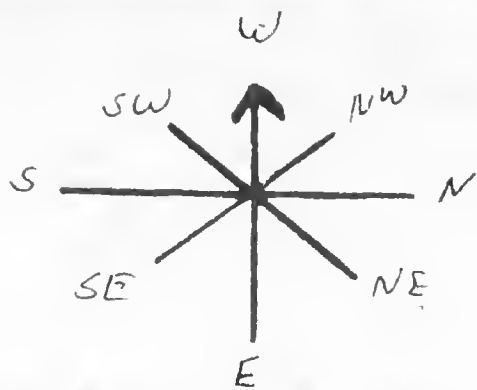
no retrices, but black markings in wings + tail

1857 Sooty Tern 1 SW

1900 Black-footed Albatross 2

60

1910 end observations



DATE 4 June 64  
Pg. # 1

time	species	#	dir.	hgt.	remarks	loc.
0520	Newell's S	1			by watch	
0525	Bulwer's P	1			by watch	
0555	begin observation					
0556	B-F Albat	3			following ship	
0602	Sooty Tern	1	E		adult	
0630	Bonin Is. P?	1			watch	
0655	Wedgetail	2	SE		both dark	
0713	D-R Petrel?	1	NW		<del>Immature</del> light colored "W" across wings like a wedgetail, white on undertail coverts & under tail, may have had white forehead, very slow wingbeats almost like wedgetail — dark above, white below. (Probably New Zealand Shear)	
0745	R-T Tropicbird	2	S		circled ship - adult	
0750	R-T Tropicbird	2	NE		all four seen at once	
0753	Bulwer's P	1	S			
0800	Harcourt's SP.	2	N			
0802	Wedgetail	1	SW			
0805	Sooty Tern	1	↗			
0817	Sooty Tern	2	S			
0828	Newell's S	1	SW			
0830	Black-footed Albatross	4			following ship	
0842	Harcourt's SP.	1	SE			
0850	Sooty Tern	1	W			
0855	Red-footed Booby	1	NW		immature	
0857	Sooty Tern	15 ± 2				
0900	Black-footed A.	5			small feeding flock	
1020	Sooty Tern	1	NE		in water around ship during hydro adult	
1033	Tropicbird	1				
1038	R-T Tropicbird	1	S		flush from water — no retrices	
1044	Bulwer's P	1	SE			
1046	R-T Tropicbird	3	S		adult	
1107	Wedgetail	1	NE		light	
1114	Christ Is. S.	1	N			
1124	Sooty Tern	2	W			

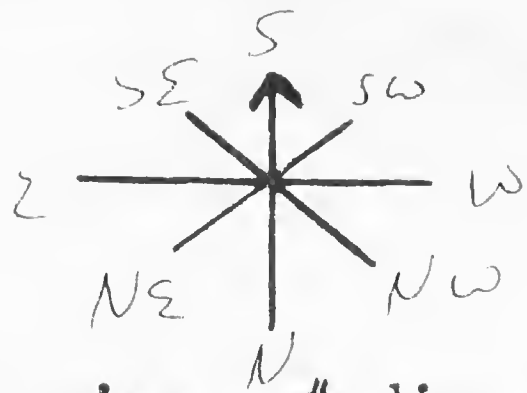




DATE 4 June 64  
Pg. # 2



time species # dir. hgt. remarks loc.

<del>1145</del>						
1145	R-T. Tropicbird	1	E			
1203	R-T Tropicbird	1	S			
1206	Wedgetail	1	NW		light	
1245	Bulwer's Petrel	2	S			
1305	Bulwers P.	1	SW			
1321	Red-tailed T.b.	2	<del>SW</del> <sup>SE</sup>			
1337	Wedgetail	3	E		light	
1342	Harcourts S.P.	2	W			
1355	Black Potted A.	7				
1356	Bulwers P	2				
1414	Wedgetail	1	N		light	
1428	Wedgetail	3	S			
1438	Sooty Tern	1			light following ship	
1441	White-tailed TB	1	N			
1442	Wedgetail	1			joined 3 behind ship	
1448	Bulwer's Petrel	1	<del>SW</del> <sup>SE</sup>			
1451	Bulwer's Petrel	1	W			
1503	Bulwer's P	1	E			
	Wedgetail	1	N			
1504	Sooty Tern	4	N			
1505	Bulwer's P	2	S			
1515	Bulwer's P	1	W			
1525	Newell's S	1	W			
1526	Sooty Tern	2	S			
1535	Bulwer's P	1	W			
1545	Sooty Tern	3	S		following ship - joined other 3, now 5	
1552	Wedgetail	2			" "	
	Bulwer's	1				
1605	Newell's S	1	E			
1650	Newell's S	2	<del>W</del> <sup>SE</sup>			
1655	Sooty Tern	3	<del>W</del> <sup>SE</sup>		3 following ship	
1657	Sooty Tern	3				
1711	Harcourts	1	N			
1720	Sooty Tern	2	N			
1737	Sooty Tern	3	NW			

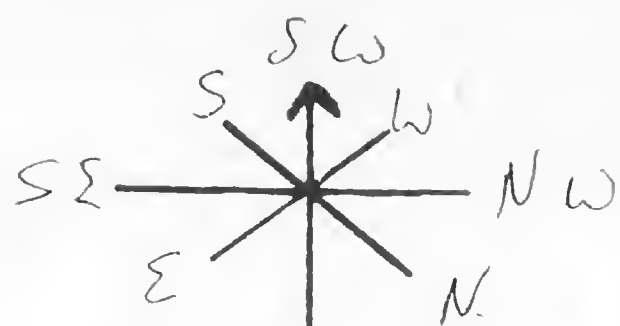


DATE 4 June 64  
Pg. # 3

time species # dir. hgt. remarks loc.

1745	Sooty Tern	1	N			
1746	Newell's S.	1	W			
1748	Wedgetail	1			light	
1758	White-tailed T.B.	1	SE		sitting on water	
1759	Newell's S.	1	N			
1800	sooty tern	1	NE			
1801	Shearwater/ petrel	1	W			
1805	Sooty Tern	3	N			
1806	shear/petrel	1	SW			
1810	bird	1				
1815	<del>Harcourt's</del> S.P.	1			large + white? seen by watch	
1816	wedgetail	1			joined buddy behind ship	
1817	Bulwers P	1	W			
1825	Sooty Tern	1	E			
1837	Bulwers P.	1	W			
1847	Sooty Tern	1				
1854	Sooty Tern	1	SW			
1900	Black-footed Albatross				banded 757-60904	
1905	Sooty Tern	1				
1908	Sooty Tern	2				
1910	Black-footed A.	6				
1915	end observations					

32  
18  
18  
13  
55  
136



DATE 5 June 64  
Pg. # 1

time species <sup>NE</sup> # dir. hgt. remarks loc.

0555 begin observations

0600 Newell's S. 1

0602 Sooty Tern 1

0616 Red-footed B 1 N adult

0617 Sooty Tern 6 N

0618 Noddy Tern 2 N scattered

0619 Wedgetail 1 N

~~Bonin Is P~~ 1 N

0620 Sooty Tern 2 N

0621 Noddy Tern 1 N

0622 Wedgetail 1 E

0625 Sooty Tern 75 ±15

Wedgetail 35 ±15

Newell's S. 1

Red-footed B. 6

0626 Redfooted B 4 N adult

0631 Red-footed B 6 N

0638 Red-footed B. 6 N scattered

0639 Sooty Tern 50 ±10

Wedgetail 10 ~~10~~

Red-footed B 4

Newell's S 2

Noddy Tern 25 ±5

Frigate 1

0649 Red-footed B 1 NE

Sooty Tern 1

Noddy T 1

0650 Sooty Tern 75

Noddy Tern 30

Red-footed B. 10

Wedgetail 10

0651 Sooty Tern 100

Noddy Tern 25

Wedgetail 15

Red-footed B. 10

Frigate 2

flight  
} feeding

adult  
adult  
scattered  
scattered

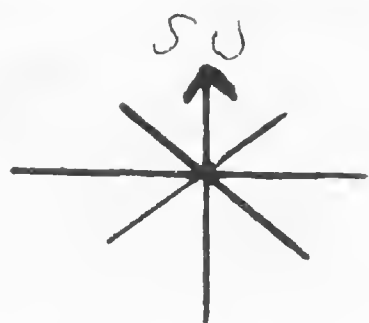
} feeding

~~feeding~~

feeding

feeding





DATE 5 June 64  
Pg. # 2

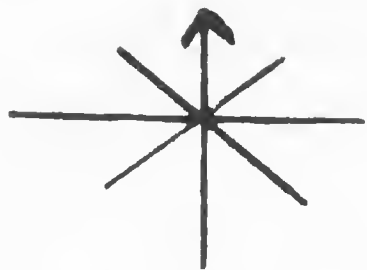
time	species	#	dir.	hgt.	remarks	loc.
0701	Sooty Tern	50				
	Noddy Tern	25				
	Red-footed B	11			feeding	
	Wedgetail	5				
12 0705	Sooty Tern	50				
	Noddy	25				
	Red-footed B	5			feeding	
	Navells	2				
	Wedgetail	8				
0710	Sooty Tern	40				
	Noddy Tern	20				
	Red Foot B.	6			feeding	
	Wedgetail	4				
	Fairy Tern	1				
0712	Red footed B	4			sitting on water	
	Noddy Tern	1				
0715	Red-foot B	4				
	Noddy Tern	1			scattered	
	Sooty Tern	2				
0720	Sooty Tern	25				
	Noddy Tern	10			feeding	
	Wedgetail	5				
0725	Sooty Tern	125				
	Noddy Tern	50				
	Red-footed B	10			feeding	
	Wedgetail	15				
	Frigate	2				
0728	Red-footed B	1				
	Dark-rumped B	1				
	Fairy Tern	1			not molting	
0732	Sooty Tern	50				
	Noddy Tern	15				
	Wedgetail	5			feeding	
	Red footed B	5				

184



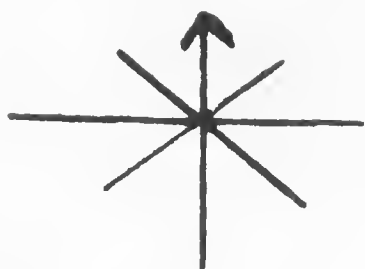
DATE 5 June 64  
Pg. # 3

time	species	#	dir.	hgt.	remarks	loc.
0740	Sooty Tern	20				
	Noddy Tern	5				
	Red foot B	1			feeding	
	Wedgetail	2				
0750	Frigate	1				
0758	Sooty Tern	4				
0807	Sooty Tern	20				
	Common Noddy	8			feeding	
	Wedgetail	20				
	Bulwer's P	1				
	R-F Booby	1				
0818	Wedgetail	1	N			
	R-F Booby	1	NE			
0825	R-F Booby	2	N			
0835	Wedgetail	3	N			
	Bulwer's P	1	N			
0843	B-F Albatross	3			following ship	
	Wedgetail	1	N			
	Bulwer's P	1	S			
0850	Wedgetail	1	W			
	Newell's S	1	W			
0900	Sooty Tern	1	NW			
0907	Bulwer's P	2	N			
0917	Wedgetail	1	E			
0930	Sooty Tern	3	E			
	Wedgetail	1	NW			
0935	Gray-Backed Tern	2	SW		circled ship in mid air, then headed SW - adults	
0945	Sooty Tern	2				
	R-F Booby	1	N			
0951	Bulwer's P	1	N			
	Brown Booby	1	W		adult	
	Sooty tern	4	W			
0958	Wedgetail	1	SW			
	Bulwer's P	1	E			
	Common Noddy	4	N			
1007	Brown Booby	1	E			
	Sooty Tern	4				
	Common Noddy	1	N			
1012	Sooty Tern	3	W			
1017	Bulwer's P	2	W			
	Hawaiian Noddy	1	W			
1021	Sooty Tern	3	W			
	Noddy Tern	1	E			



DATE 5 June 64  
Pg. # 4

time	species	#	dir.	hgt.	remarks	loc.
1025	Noddy Tern	2	W			
	Sooty Tern	2	W			
1026	Tropicbird sp	1			seen by watch, sitting on water	
1032	Bulwers P	1	W			
	Noddy Tern	1	W			
	Wedgetail	1	E			
	Newell's S.	1	W			
1035	Red-footed B	2	E			
1042	Newell's S.	1	W			
1046	Sooty Tern	29			Goose flock - travelling	
1049	Bulwers P	1	E			
1050	Sooty Tern	2	W			
1055	Sooty Tern	1	W			
	Noddy Tern	1	E			
1057	Sooty Tern	2	NW			
	Noddy Tern	1	SE			
1100	Sooty Tern	5	NW			
1102	Noddy Tern	8	SE			
	Sooty Tern	1	NW			
	Wedgetail Shear	3	S		light	
1110	Noddy Tern	5	S			
1117	Sooty Tern	3	N			
	Noddy Tern	6	N+S			
	Hawaiian Noddy	1	SW			
1128	Noddy Tern	1	S			
1130	Sooty Tern	6	S			
	Noddy Tern	4	N			
1135	Sooty Tern	1	N			
1146	Sooty Tern	3	N			
	Noddy Tern	2	N			



DATE 5 June 64  
Pg. # 5

time	species	#	dir.	hgt.	remarks	loc.
1150	Sooty Tern	4	SE			
1155	Sooty Tern	6	SE			
	Com. Noddy	1	E			
1200	Sooty Tern	1	SE			
1203	Wedgetail	2	SE			
1209	Sooty Tern	2	SE			
	Common Noddy	1	NE			
1214	Com. Noddy	8	SE			
1220	Sooty Tern	8	SE			
1230	end observation					



58  
11  
120  
50  
239

SI-MNH-955b  
3-4-64

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS

AT SEA SURVEY CHART B

DATE

17 May 64

Time at sunrise = <sup>0800</sup> Position at sunrise =  $20^{\circ}54'N$   $156^{\circ}28'W$

Time at sunset = <sup>1857</sup> Position at sunset =  $19^{\circ}54'N$   $157^{\circ}00'W$

Miles traveled from 0000 hours to sunrise =       

Miles traveled from sunrise to sunset = 105

Miles traveled from sunset to 2400 hours = 54

TIME OF FIX	TYPE OF FIX	LONGITUDE	LATITUDE
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1.

2.

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4.

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6.

DATE

18 May 64

Time at sunrise = <sup>0556</sup> Position at sunrise =  $17^{\circ}58'N$   $157^{\circ}51'W$

Time at sunset = <sup>1851</sup> Position at sunset =  $15^{\circ}47'N$   $157^{\circ}00'W$

Miles traveled from 0000 hours to sunrise = 62

Miles traveled from sunrise to sunset = 131

Miles traveled from sunset to 2400 hours = 56

TIME OF FIX	TYPE OF FIX	LONGITUDE	LATITUDE
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1.

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SI-MNH-955b  
3-4-64

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS

AT SEA SURVEY CHART B

DATE 19 May 64

Time at sunrise = <sup>0559</sup> Position at sunrise =  $14^{\circ}07'N$   $156^{\circ}59'W$

Time at sunset = <sup>1846</sup> Position at sunset =  $11^{\circ}52'N$   $157^{\circ}02'W$

Miles traveled from 0000 hours to sunrise = 44

Miles traveled from sunrise to sunset = 135

Miles traveled from sunset to 2400 hours = 47

	TIME OF FIX	TYPE OF FIX	LONGITUDE	LATITUDE
1.				
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DATE 20 May 64

Time at sunrise = <sup>0559</sup> Position at sunrise =  $10^{\circ}55'N$   $155^{\circ}47'W$

Time at sunset = <sup>1831</sup> Position at sunset =  $10^{\circ}06'N$   $154^{\circ}00'W$

Miles traveled from 0000 hours to sunrise = 55

Miles traveled from sunrise to sunset = 124

Miles traveled from sunset to 2400 hours = 60

	TIME OF FIX	TYPE OF FIX	LONGITUDE	LATITUDE
1.				
2.				
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6.				

SI-MNH-955b  
3-4-64

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS

AT SEA SURVEY CHART B

DATE

21 May 64

Time at sunrise = <sup>0551</sup> Position at sunrise =  $11^{\circ}59'N$   $153^{\circ}58'W$

Time at sunset = <sup>1839</sup> Position at sunset =  $14^{\circ}10'N$   $154^{\circ}01'W$

Miles traveled from 0000 hours to sunrise = 53

Miles traveled from sunrise to sunset = 131

Miles traveled from sunset to 2400 hours = 36

TIME OF FIX	TYPE OF FIX	LONGITUDE	LATITUDE
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1.

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DATE

22 May 64

Time at sunrise = <sup>0546</sup> Position at sunrise =  $15^{\circ}50'N$   $154^{\circ}00'W$

Time at sunset = <sup>1845</sup> Position at sunset =  $17^{\circ}52'N$   $154^{\circ}00'W$

Miles traveled from 0000 hours to sunrise = 64

Miles traveled from sunrise to sunset = 123

Miles traveled from sunset to 2400 hours = 55

TIME OF FIX	TYPE OF FIX	LONGITUDE	LATITUDE
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1.

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6.



SI-MNH-955b  
3-4-64

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS

AT SEA SURVEY CHART B

DATE

23 May 64

Time at sunrise = <sup>0538</sup> Position at sunrise =  $19^{\circ} 38' N$   $154^{\circ} 00' W$

Time at sunset = <sup>1851</sup> Position at sunset =  $21^{\circ} 54' N$   $154^{\circ} 01' W$

Miles traveled from 0000 hours to sunrise = 50

Miles traveled from sunrise to sunset = 136

Miles traveled from sunset to 2400 hours = 36

TIME OF FIX	TYPE OF FIX	LONGITUDE	LATITUDE
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1.

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DATE

24 May 64

Time at sunrise = <sup>0530</sup> Position at sunrise =  $23^{\circ} 30' N$   $154^{\circ} 00' W$

Time at sunset = <sup>1848</sup> Position at sunset =  $23^{\circ} 29' N$   $151^{\circ} 56' W$

Miles traveled from 0000 hours to sunrise = 60

Miles traveled from sunrise to sunset = 124

Miles traveled from sunset to 2400 hours = 49

TIME OF FIX	TYPE OF FIX	LONGITUDE	LATITUDE
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1.

2.

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6.

SI-MNH-955b  
3-4-64

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS

AT SEA SURVEY CHART B

DATE

25 May 64

Time at sunrise = <sup>0522</sup> Position at sunrise =  $22^{\circ}48'N$   $150^{\circ}58'W$

Time at sunset = <sup>1837</sup> Position at sunset =  $20^{\circ}20'N$   $151^{\circ}01'W$

Miles traveled from 0000 hours to sunrise = 49

Miles traveled from sunrise to sunset = 138

Miles traveled from sunset to 2400 hours = 40

TIME OF FIX	TYPE OF FIX	LONGITUDE	LATITUDE
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1.

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6.

DATE

26 May 64

Time at sunrise = <sup>10527</sup> Position at sunrise =  $18^{\circ}55'N$   $151^{\circ}03'W$

Time at sunset = <sup>1832</sup> Position at sunset =  $16^{\circ}42'N$   $150^{\circ}57'W$

Miles traveled from 0000 hours to sunrise = 55

Miles traveled from sunrise to sunset = 133

Miles traveled from sunset to 2400 hours = 44

TIME OF FIX	TYPE OF FIX	LONGITUDE	LATITUDE
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1.

2.

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SI-MNH-955b  
3-4-64

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS

AT SEA SURVEY CHART B

DATE

27 May 64

Time at sunrise = <sup>0533</sup> Position at sunrise =  $14^{\circ}51'N$   $151^{\circ}01'W$   
Time at sunset = <sup>1825</sup> Position at sunset =  $12^{\circ}42'N$   $150^{\circ}59'W$   
Miles traveled from 0000 hours to sunrise = 67  
Miles traveled from sunrise to sunset = 129  
Miles traveled from sunset to 2400 hours = 59

TIME OF FIX	TYPE OF FIX	LONGITUDE	LATITUDE
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- 1.
- 2.
- 3.
- 4.
- 5.
- 6.

DATE

28 May 64

Time at sunrise = <sup>0538</sup> Position at sunrise =  $11^{\circ}11'N$   $150^{\circ}34'W$   
Time at sunset = <sup>1810</sup> Position at sunset =  $10^{\circ}16'N$   $148^{\circ}30'W$   
Miles traveled from 0000 hours to sunrise = 49  
Miles traveled from sunrise to sunset = 133  
Miles traveled from sunset to 2400 hours = 44

TIME OF FIX	TYPE OF FIX	LONGITUDE	LATITUDE
-------------	-------------	-----------	----------

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.

SI-MNH-955b  
3-4-64

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS

AT SEA SURVEY CHART B

DATE

29 May 64

Time at sunrise = <sup>0528</sup> Position at sunrise =  $11^{\circ}26'N$   $148^{\circ}08'W$

Time at sunset = <sup>1814</sup> Position at sunset =  $13^{\circ}21'N$   $148^{\circ}05'W$

Miles traveled from 0000 hours to sunrise = 62

Miles traveled from sunrise to sunset = 115

Miles traveled from sunset to 2400 hours = 62

TIME OF FIX	TYPE OF FIX	LONGITUDE	LATITUDE
-------------	-------------	-----------	----------

1.

2.

3.

4.

5.

6.

DATE

30 May 64

Time at sunrise = <sup>0521</sup> Position at sunrise =  $15^{\circ}12'N$   $147^{\circ}54'W$

Time at sunset = <sup>1822</sup> Position at sunset =  $17^{\circ}31'N$   $148^{\circ}04'W$

Miles traveled from 0000 hours to sunrise = 49

Miles traveled from sunrise to sunset = 139

Miles traveled from sunset to 2400 hours = 52

TIME OF FIX	TYPE OF FIX	LONGITUDE	LATITUDE
-------------	-------------	-----------	----------

1.

2.

3.

4.

5.

6.



SI-MNH-955b  
3-4-64

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS

AT SEA SURVEY CHART B

DATE

31 May 64

Time at sunrise = 0514 Position at sunrise = 19°10'N 147°57'W

Time at sunset = 1828 Position at sunset = 20°30'N 147°58'W

Miles traveled from 0000 hours to sunrise = 47

Miles traveled from sunrise to sunset = 80

Miles traveled from sunset to 2400 hours = 55

TIME OF FIX	TYPE OF FIX	LONGITUDE	LATITUDE
-------------	-------------	-----------	----------

1.

2.

3.

4.

5.

6.

DATE

1 June 64

Time at sunrise = 0508 Position at sunrise = 22°10'N 147°58'W

Time at sunset = 1836 Position at sunset = 24°40'W 148°00'W

Miles traveled from 0000 hours to sunrise = 45

Miles traveled from sunrise to sunset = 150

Miles traveled from sunset to 2400 hours = 41

TIME OF FIX	TYPE OF FIX	LONGITUDE	LATITUDE
-------------	-------------	-----------	----------

1.

2.

3.

4.

5.

6.

SI-MNH-955b  
3-4-64.

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS

AT SEA SURVEY CHART B

DATE 2 June 64

Time at sunrise = <sup>0459</sup> Position at sunrise =  $26^{\circ}20'N$   $147^{\circ}53'W$

Time at sunset = <sup>1847</sup> Position at sunset =  $25^{\circ}24'N$   $150^{\circ}10'W$

Miles traveled from 0000 hours to sunrise = 59

Miles traveled from sunrise to sunset = 150

Miles traveled from sunset to 2400 hours = 52

	TIME OF FIX	TYPE OF FIX	LONGITUDE	LATITUDE
1.				
2.				
3.				
4.				
5.				
6.				

DATE 3 June 64

Time at sunrise = <sup>0517</sup> Position at sunrise =  $24^{\circ}59'N$   $151^{\circ}50'W$

Time at sunset = <sup>1903</sup> Position at sunset =  $24^{\circ}56'N$   $154^{\circ}00'W$   
 $24^{\circ}58'N$   $154^{\circ}28'W$

Miles traveled from 0000 hours to sunrise = 50

Miles traveled from sunrise to sunset = 130

Miles traveled from sunset to 2400 hours = 78

	TIME OF FIX	TYPE OF FIX	LONGITUDE	LATITUDE
1.				
2.				
3.				
4.				
5.				
6.				

SI-MNH-955b  
3-4-64

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS

AT SEA SURVEY CHART B

DATE

4 June 64

Time at sunrise = <sup>0535</sup> Position at sunrise = 25° 00' N 156° 22' W

Time at sunset = <sup>1911</sup> Position at sunset = 23° 30' N 156° 58' W

Miles traveled from 0000 hours to sunrise = 64

Miles traveled from sunrise to sunset = 128

Miles traveled from sunset to 2400 hours = 41

TIME OF FIX	TYPE OF FIX	LONGITUDE	LATITUDE
-------------	-------------	-----------	----------

1.

2.

3.

4.

5.

6.

DATE

5 June 64

Time at sunrise = <sup>0544</sup> Position at sunrise = 25° 00' N 157° 22' W

Time at sunset = <sup>1200</sup> Position at sunset = 21° 18' N 157° 52' W

Miles traveled from 0000 hours to sunrise = 49

Miles traveled from sunrise to sunset = 73

Miles traveled from sunset to 2400 hours = —

TIME OF FIX	TYPE OF FIX	LONGITUDE	LATITUDE
-------------	-------------	-----------	----------

1.

2.

3.

4.

5.

6.

B. C. F. Townsend Cromwell May 1964 Cruise

The May 1964 Townsend Cromwell cruise was the fourth of a series of cruises run by the U. S. Fish and Wildlife Bureau of Commercial Fisheries covering a fixed grid to the east of the main Hawaiian Islands for the purpose of determining the variations in structure of the water masses and currents of this area. The cruise started 17 May 64 and ended 5 June 64, covering approximately 4600 miles in 20 days.

Pacific Project personnel maintained daily sunrise to sunset bird observations for a total of 253.1 hours. In addition Project personnel aided in recording weather observations and in taking bathythermograph traces. Project personnel included David Bratley and Warren King.

Upon availability of oceanographic data, an attempt will be made to correlate bird distribution with prevalent oceanographic conditions of the cruise.



## SPECIES ACCOUNT

## Black-footed Albatross

Numbers of this species dropped 46% from 37 in April to 20 in May. This decline in numbers was accompanied by a northward trend in distribution. The southern limit of the range of this species seems to coincide with the convergence area between the North Pacific Central Water and the California Current Extension. One of this species was banded and released on 4 June 64.

## Wedgetailed Shearwater

Numbers of this species rose from 352 in April to 1637 in May, an increase of 365%. Dark phase birds predominated south of 13°N this cruise, indicating a northward extension of the feeding grounds for the southern populations. In feeding flocks around Oahu, there were proportionately fewer Wedgetails than previous months, due probably to the beginning of egg laying in main Hawaiian Island colonies.

## Sooty Shearwater

The last of 44 Sooty Shearwaters seen this month passed northwest on 27 May. Between 18 March and 27 May 1967 of this species were observed, all heading approximately northwest. Peak numbers were observed 3 April when 1337 were seen.

## Christmas Island Shearwater

Two of this species were seen in the grid area this month, one north of Oahu and the other toward the southern end of the grid.

## Newell's Shearwater

A sharp 450% increase from 12 in April to 66 in May was experienced this month due probably to the beginning of its breeding cycle in the main Hawaiian Islands. This species was seen in all parts of the grid except the eastern portion. Concentrations were found around Oahu and across the southern portion of the grid. This species was observed frequently in small numbers in feeding flocks composed mainly of Sooty Terns and Wedgetailed Shearwaters.

## Bonin Island Petrel

Numbers of this species rose abruptly from 2 in April to 69 in May, all but one of which were in the south to southeastern portions of the grid area. Virtually all of these birds were undergoing heavy molt. Several were flushed from the water by the approaching ship.

## Herald's Petrel?

Two medium sized chunky petrels with brown upperparts, white underparts and mottled dark underwings were probably this species. Both birds were clearly seen at close range.

## Dark-rumped Petrel

This species rose 671% in numbers, from 17 in April to 131 in May. All but 6 of these were in the southern portion of the grid area. All of these southern birds were undergoing heavy molt. Primary and secondary wing feathers were often missing and the entire dark upperparts were splotched and mottled. Many birds were flushed from the water by the approaching ship. The northern birds had without exception fresh plumage.



Since egg dates for Hawaii are thought to be April-May and for the Galapagos race June-July, it may be the case that the northern, fresh plumaged birds are the Hawaiian race and the southern, heavily molting birds are from the Galapagos Islands.

#### White-necked Petrel

Numbers of this species increased from three in April to 34 in May. All of these were seen in the southern end of the grid area. All were undergoing heavy molt. Many had missing primary and secondary wing feathers, and birds were flushed from the water by the approaching ship. This species was often seen in close company with molting Dark-rumped Petrels, sometimes two or three of each species sitting together on the water. This species was found in the southern feeding flocks along with molting Dark-rumped Petrels, dark phase Wedgetails and Sooty Terns.

#### Bulwer's Petrel

This species increased in number 536%, from 28 in April to 178 in May. Large concentrations of this species were found around Maui and Oahu. Small flocks of up to nine individuals were seen, and a number of birds were seen in and around the edges of feeding flocks of Sooty Terns and Wedgetailed Shearwaters, but none was observed feeding.

#### Harcourt's Storm Petrel

Numbers of this species showed a 50% decrease from 129 in April to 64 in May. This species still showed the relatively random distribution throughout the entire grid area it has exhibited in past months. On one occasion four birds were seen sitting on and flying over a slick.

## Red-tailed Tropicbird

This species increased in number 257% from 7 in April to 25 in May. There was a minor concentration of these birds in the northwestern corner of the grid area, where on two occasions courtship flight was observed.

## White-tailed Tropicbird

Numbers of this species increased 500% from 4 in April to 24 in May. Twelve of these were seen along the coast of Maui where the species is known to breed.

## Blue-faced Booby

This species increased 125% from 4 in April to 9 in May. All were immature or sub-adult birds. All were seen in the southwest corner of the grid area.

## Brown Booby

Two of this species were seen within sight of the coast of Oahu where it breeds.

## Red-footed Booby

This species increased 52% from 71 in April to 108 in May. All but one of these were seen within 60 miles of Oahu where they breed. One bird, an immature, was seen in the northwest corner of the grid area.

## Great Frigatebird

Eleven of this species were seen in the grid area, 2 at the southern end and the remaining 9 near Oahu, where they roost.

## Grey-backed Tern

Two of this species were observed flying toward Moku Manu, where a small breeding colony is established.

## Sooty Tern

This species increased 91% in numbers, from 1633 to 3117. As in past months concentrations of this species occurred near Oahu and in the southern portion of the grid area. On several occasions immature birds were observed in the company of adults, both in the north and south, since the immatures of Moku Manu, off Oahu are now all flying, in addition to the immatures of the southern populations.

## Noddy Tern

This species increased 81% from 165 to 304. All of these were seen within 50 miles of Oahu or Maui. In feeding flocks to the north of Oahu they were in the proportion of one Noddy for every three Sooty Terns.

## Hawaiian Noddy Tern

Seven of this species were seen in May, five within sight of Maui and two within sight of Oahu.

## Fairy Tern

Seven of this species were seen in the grid area in May. The species was absent from the area in April. Five were seen in the southern portion of the grid and two were seen just north of Oahu.



## Skua

Two birds, which could only be of this species, were observed in the grid area on 17 May and 30 May. Both birds were carefully observed at close range. This species is not unexpected as a stray in the central Pacific area.

## Pomarine Jaeger

Two birds of this species were observed in the grid area on 19 May and 23 May, both heading north.

TABLE I

Date		Minutes of Observation	Miles Covered
May	17	657	105
	18	775	131
	19	767	135
	20	752	124
	21	768	131
	22	779	123
	23	793	136
	24	798	124
	25	795	138
	26	785	133
	27	772	129
	28	752	133
	29	766	115
	30	781	139
	31	794	80
June	1	808	150
	2	828	150
	3	826	130
	4	816	128
	5	376	73
Total 20		15188	2507
Average		759.4	125.4

TABLE II

<u>Date</u>	<u>Total Birds</u>	<u>Total Sightings</u>	<u>Birds/Sighting</u>	<u>Birds/ Mile</u>	<u>Total Flocks</u>	<u>Total Birds in Flocks</u>
May 17	619	105	5.80	5.80	8	472
18	320	41	7.80	2.44	6	269
19	410	78	5.13	3.04	9	315
20	583	78	7.47	4.70	7	489
21	29	25	1.16	.22	0	0
22	36	18	2.00	.29	3	20
23	93	31	3.00	.68	2	47
24	15	13	1.15	.12	0	0
25	7	7	1.00	.05	0	0
26	19	16	1.19	.14	0	0
27	1192	80	14.90	9.24	11	1093
28	300	65	4.62	2.26	5	223
29	643	72	8.93	5.51	12	560
30	31	23	1.35	.22	0	0
31	22	17	1.29	.28	1	5
June 1	9	9	1.00	.06	0	0
2	25	18	1.39	.17	0	0
3	325 <sup>352</sup>	65	5.42	2.71	9	272
4	136	78	1.74	1.06	1	15
5	1377	72	19.13	18.86	13	1136
Total						
20	6218	811	---	---	87	4916
Average	310.9	40.6	4.77	2.89	4.4	245.8

TABLE III

		<u>Procellariids</u>	<u>Tropicbirds</u>	<u>Terns</u>	<u>Boobies</u>	<u>Frigatebirds</u>
May	17	330	12	271	5	0
	18	160	2	158	0	0
	19	182	1	217	9	0
	20	291	3	280	3	2
	21	26	1	2	0	0
	22	22	2	12	0	0
	23	73	1	18	0	0
	24	14	0	1	0	0
	25	5	1	1	0	0
	26	19	0	0	0	0
	27	483	2	707	0	0
	28	182	2	116	0	0
	29	320	2	321	0	0
	30	30	0	0	0	0
	31	19	2	1	0	0
June	1	5	3	1	0	0
	2	22	3	0	0	0
	3	153	8	187	0	3
	4	63	16	55	1	0
	5	176	1	1090	104	6
Total						
	20	2575	62	3438	122	11
Average						
		128.8	3.1	171.9	6.1	.6



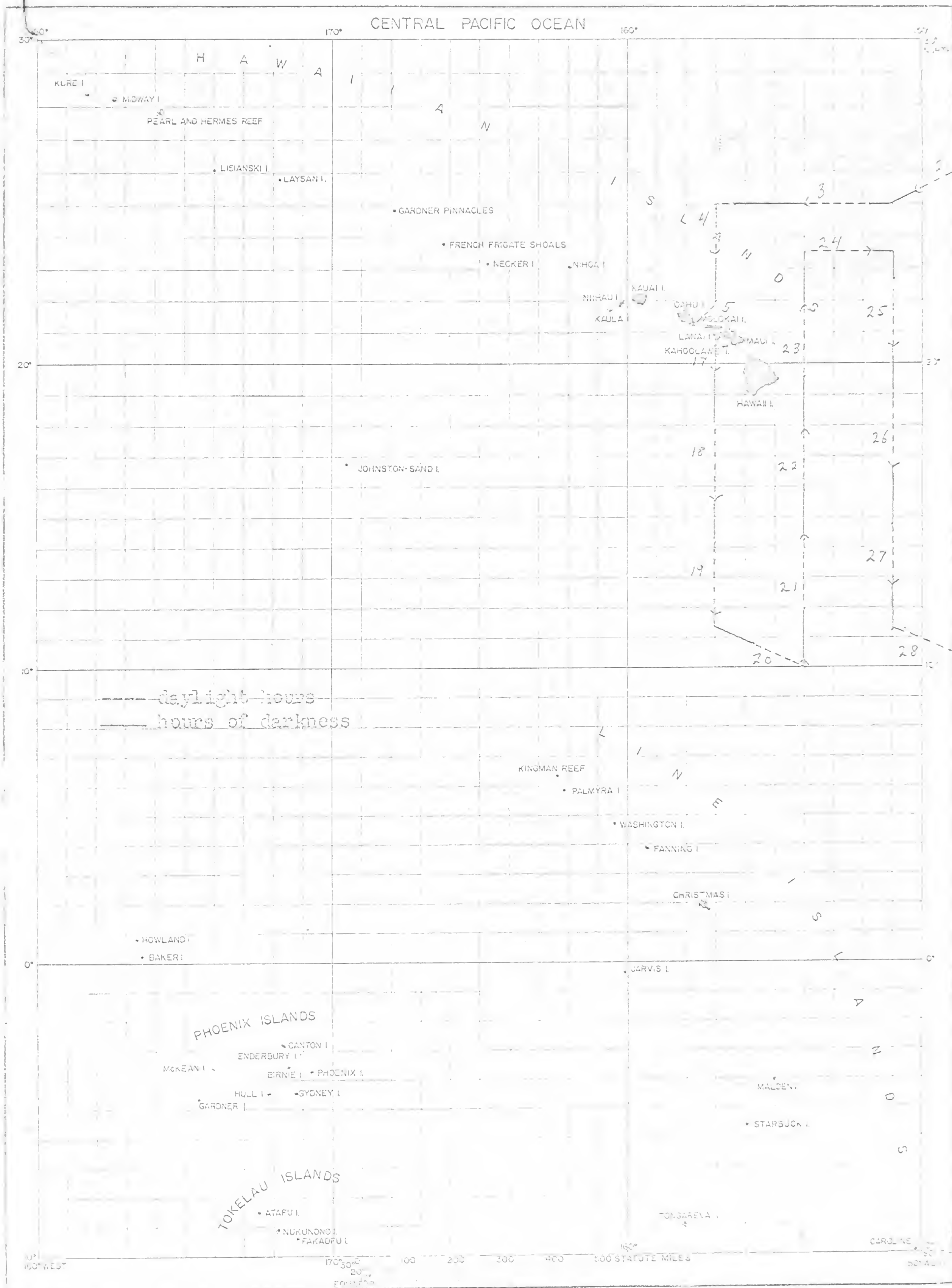
TABLE IV  
PROCELLARIID BREAKDOWN

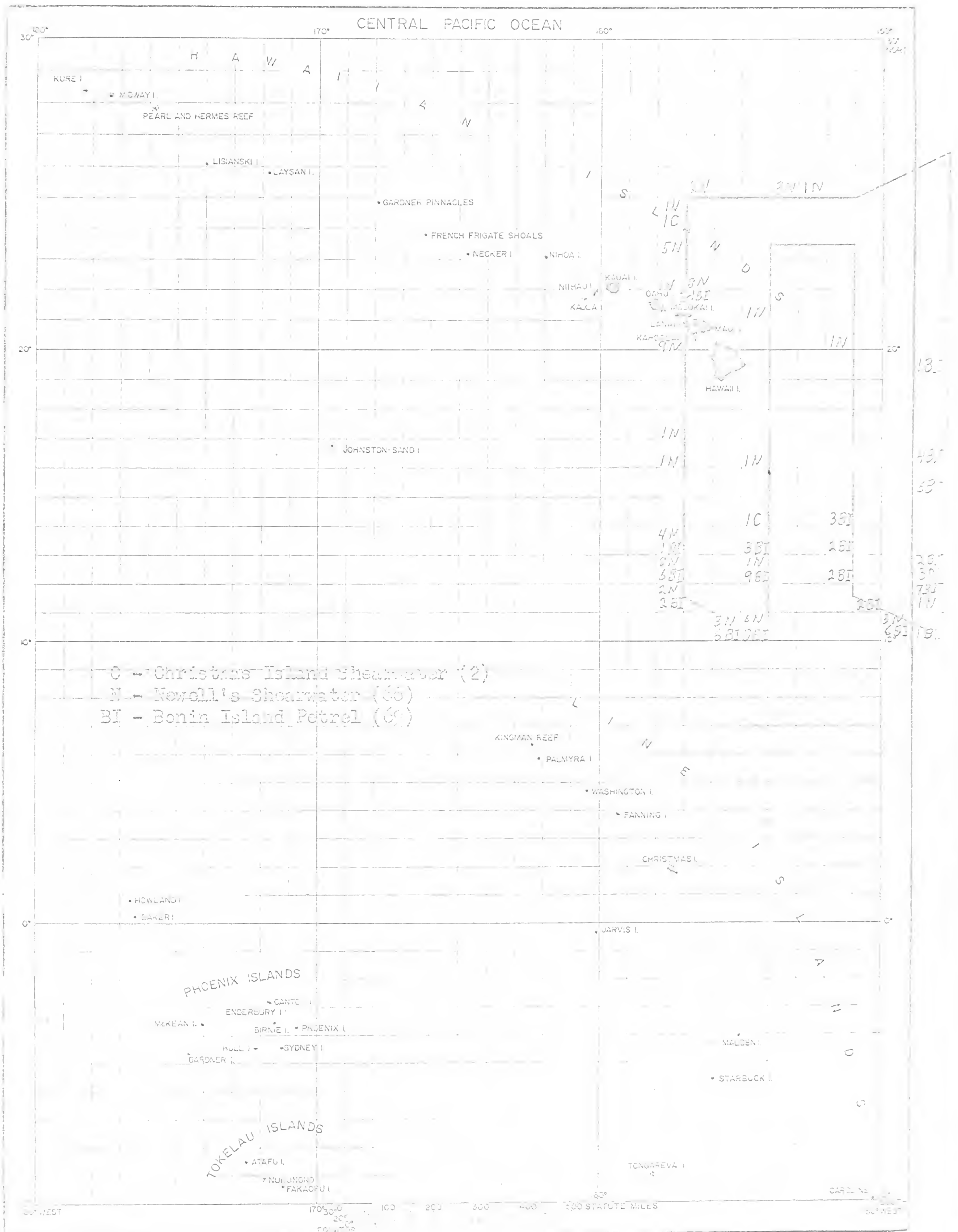
<u>Date</u>		<u>Black-footed</u> <u>Albatross</u>	<u>Wedgetail</u>	<u>Sooty</u> <u>Shearwater</u>	<u>Newell's</u> <u>Shearwater</u>	<u>Dark-Rumped</u> <u>Petrel</u>
May	17	0	229	5	9	1
	18	0	123	9	2	0
	19	1	58	23	14	1
	20	0	235	0	9	3
	21	0	2	1	1	1
	22	0	10	0	1	0
	23	0	61	2	1	0
	24	3	3	2	0	1
	25	0	0	1	1	0
	26	0	6	0	0	1
	27	0	414	1	0	24
	28	0	97	0	3	37
	29	0	126	0	4	56
	30	0	6	0	0	2
	31	0	9	0	0	0
June	1	1	1	0	0	1
	2	2	6	0	0	1
	3	3	82	0	4	1
	4	7	18	0	8	0
	5	3	151	0	9	1
Total						
	20	20	1637	44	66	131
Average						
		1	81.9	2.2	3.3	6.6

TABLE IV (continued)

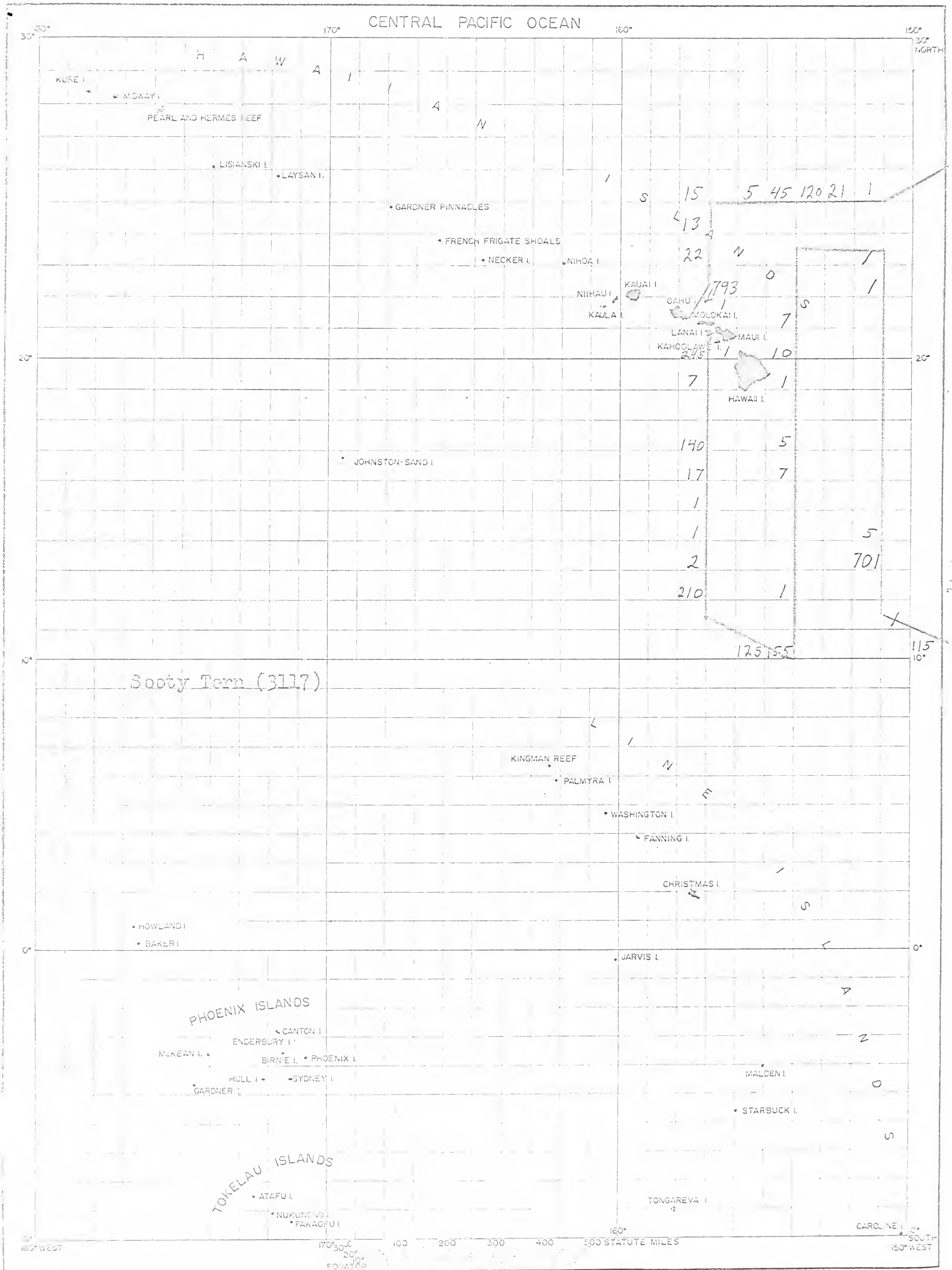
## PROCELLARIID BREAKDOWN

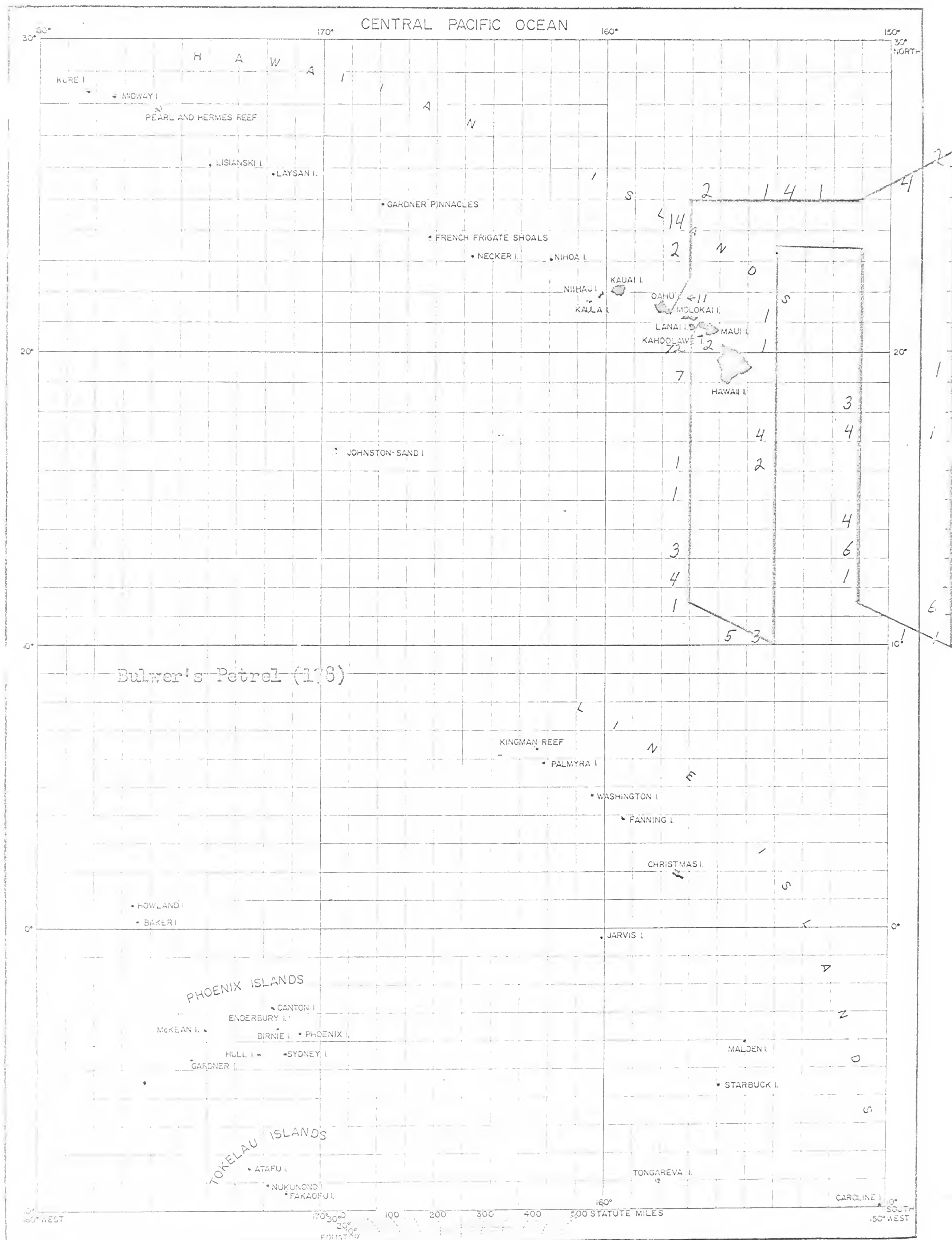
<u>Date</u>		<u>White-necked</u> <u>Petrel</u>	<u>Bonin Island</u> <u>Petrel</u>	<u>Bulwer's</u> <u>Petrel</u>	<u>Storm</u> <u>Petrel</u>	<u>Unidentified</u> <u>Procellariids</u>
May	17	0	0	81	0	4
	18	0	0	2	1	23
	19	2	10	8	5	60
	20	8	9	8	9	11
	21	1	12	0	2	5
	22	0	0	6	1	3
	23	0	0	2	4	3
	24	0	0	0	5	0
	25	0	0	0	3	0
	26	0	0	7	3	2
	27	7	7	11	3	16
	28	4	9	2	9	21
	29	12	9	7	1	105
	30	0	10	1	1	10
	31	0	1	1	6	2
June	1	0	0	0	1	1
	2	0	0	7	5	1
	3	0	1	6	6	50
	4	0	0	18	7	5
	5	0	1	11	0	0
Total						
	20	34	69	178	72	322
Average						
		1.7	3.5	8.9	3.6	16.1

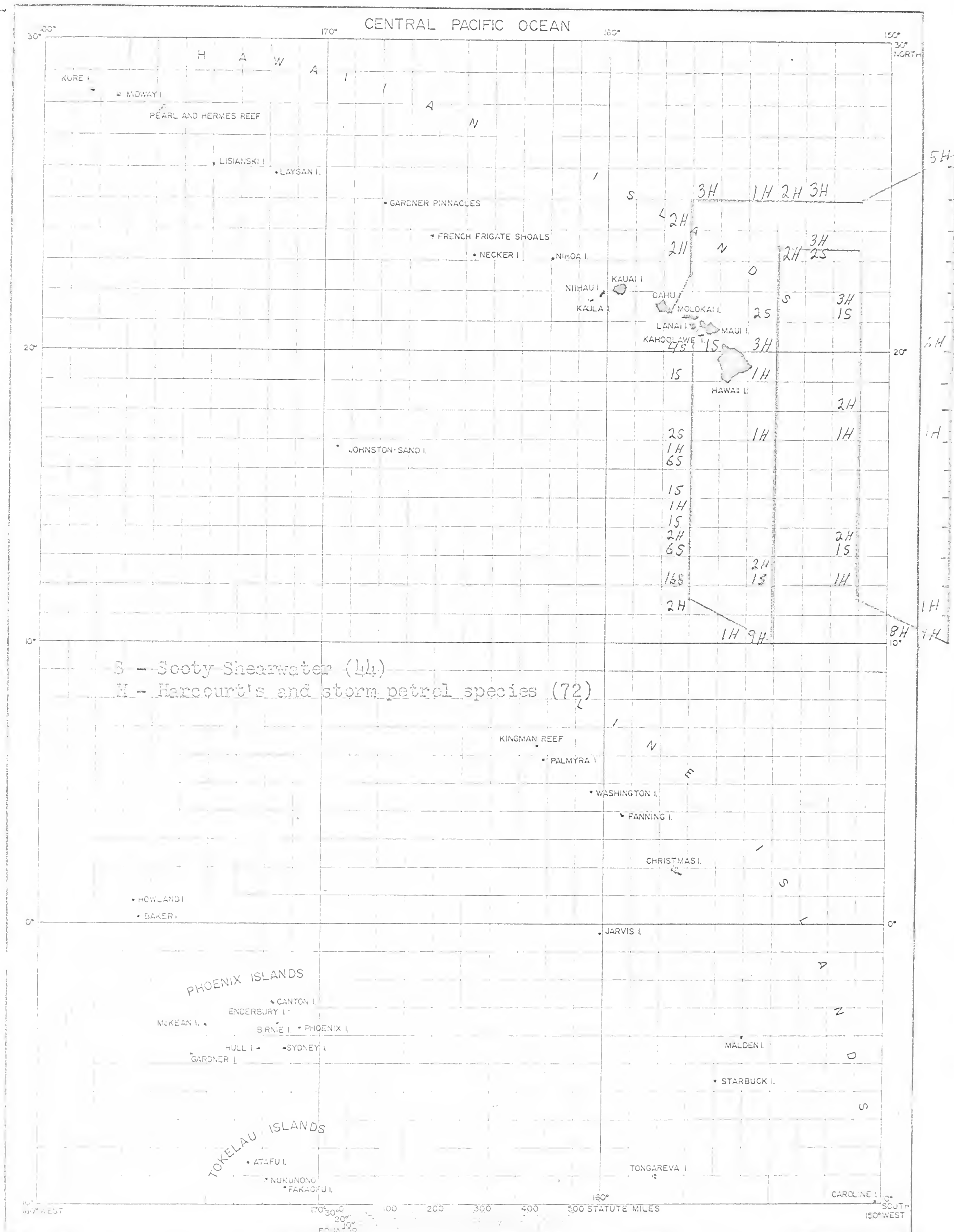




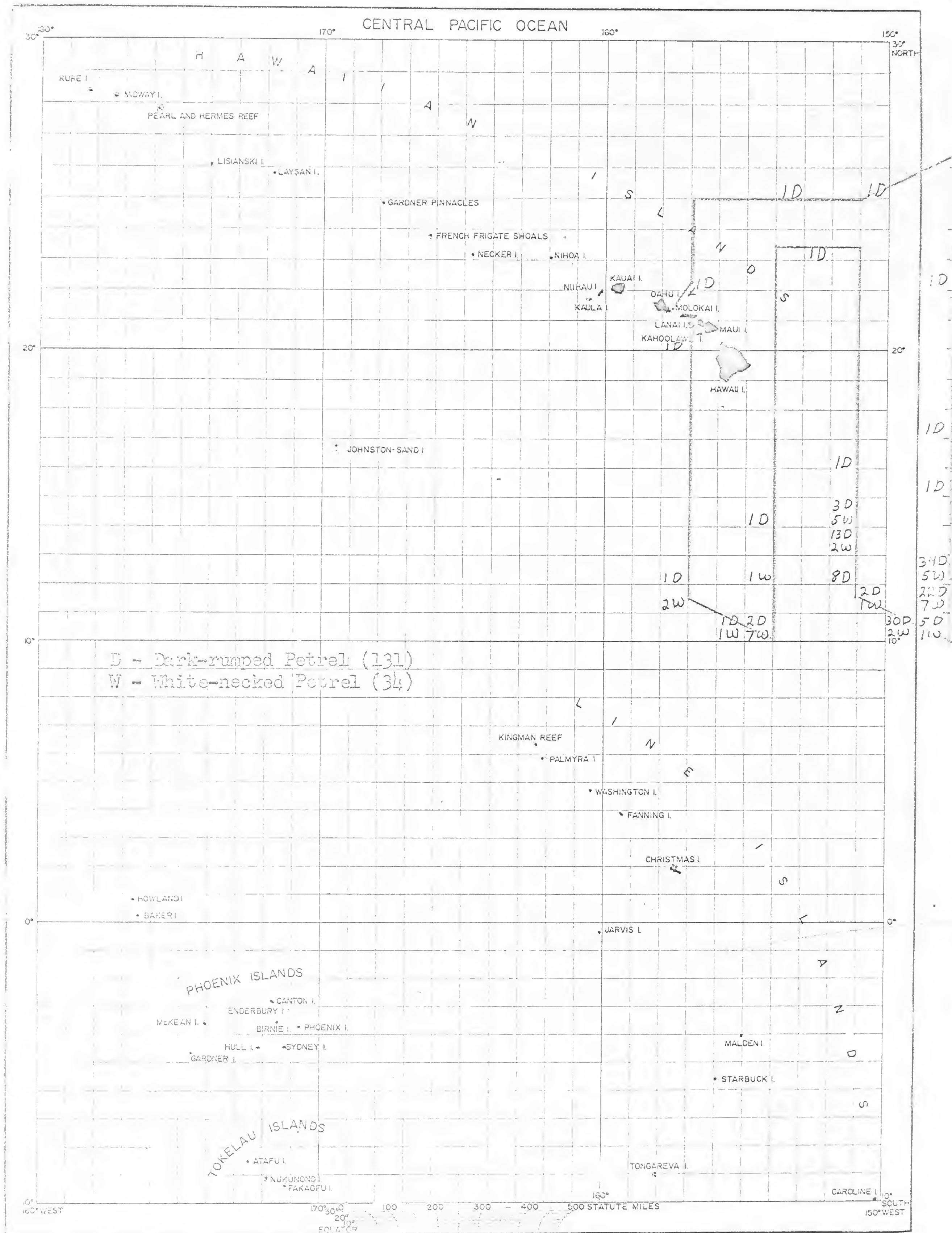




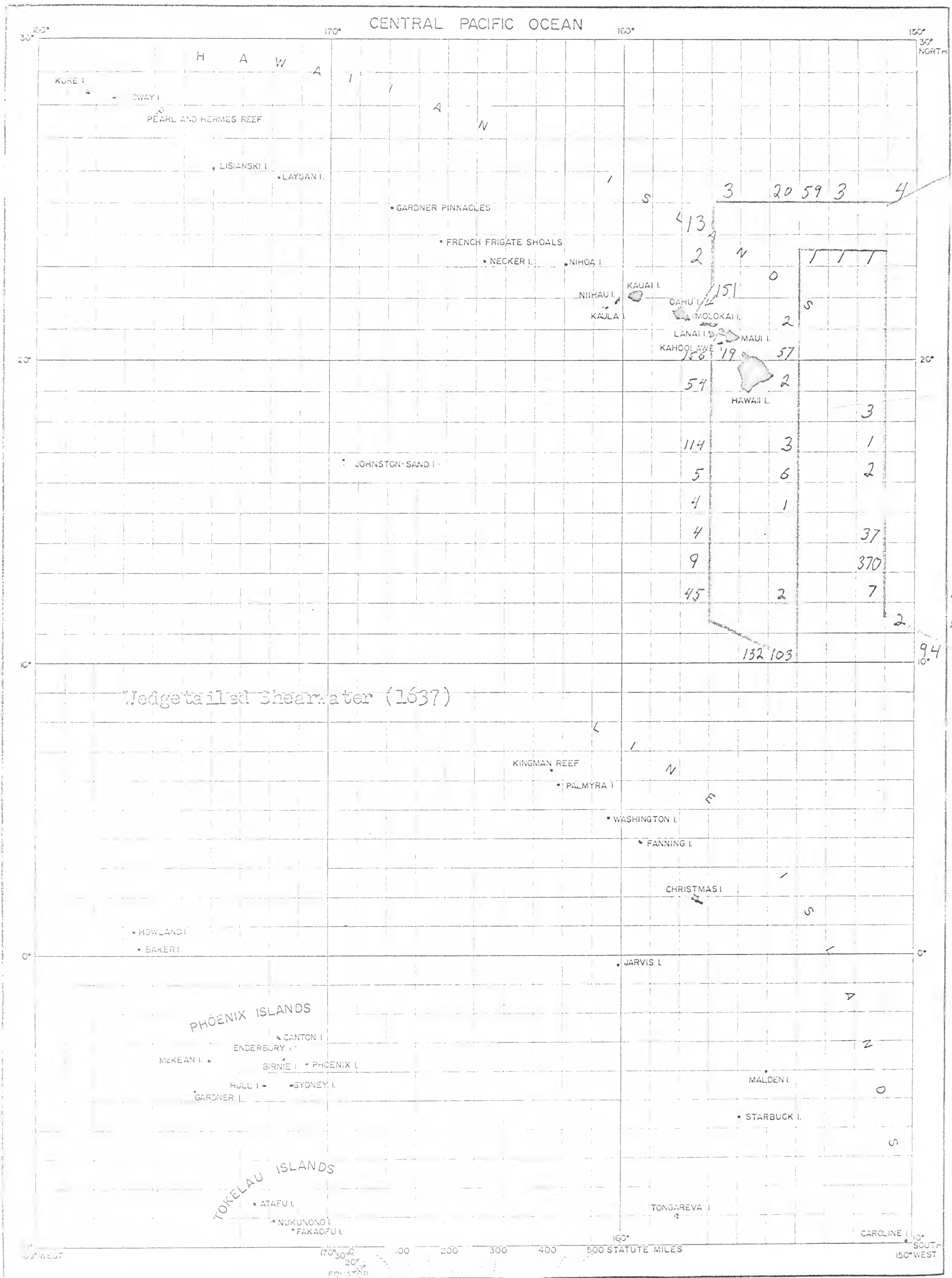


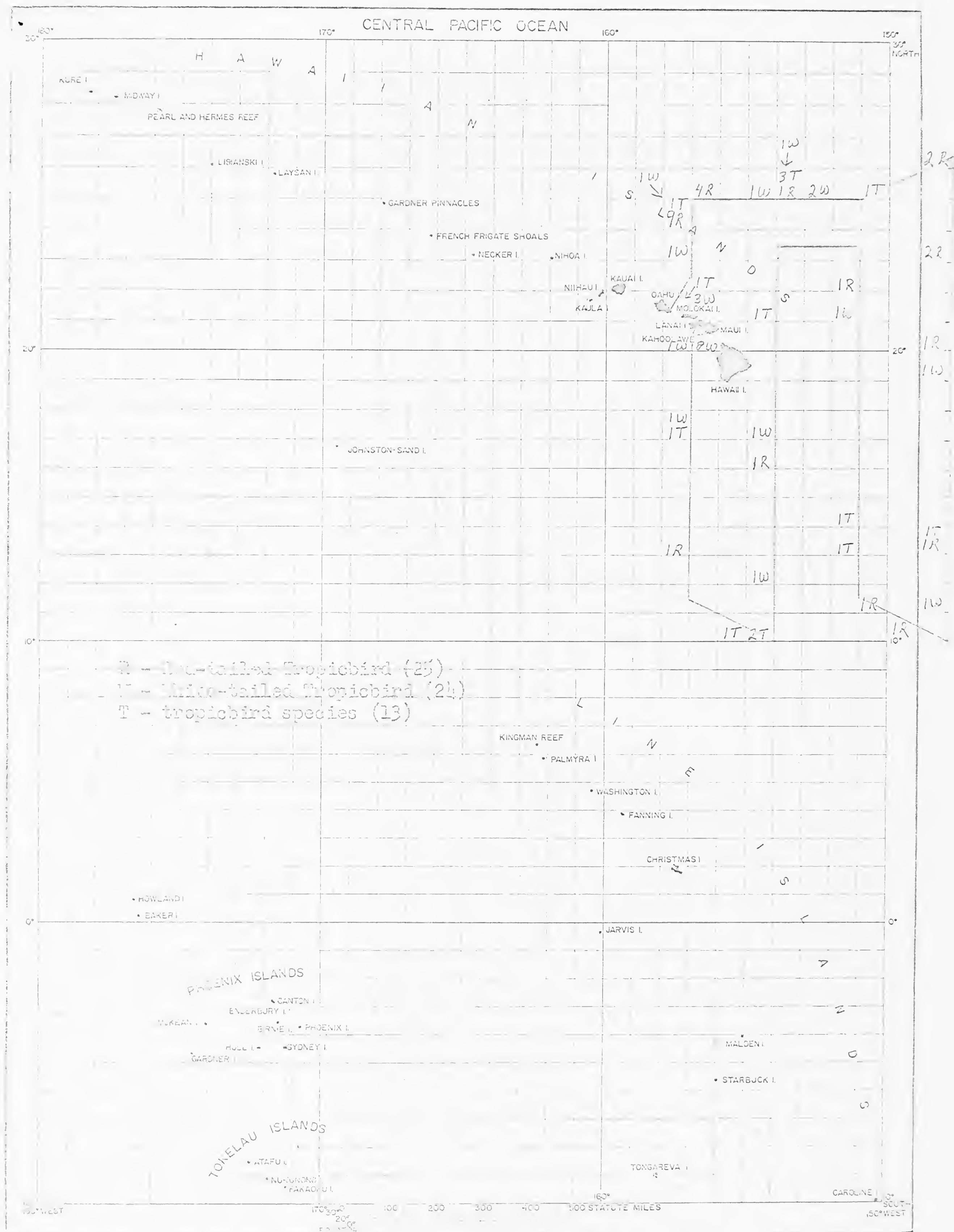


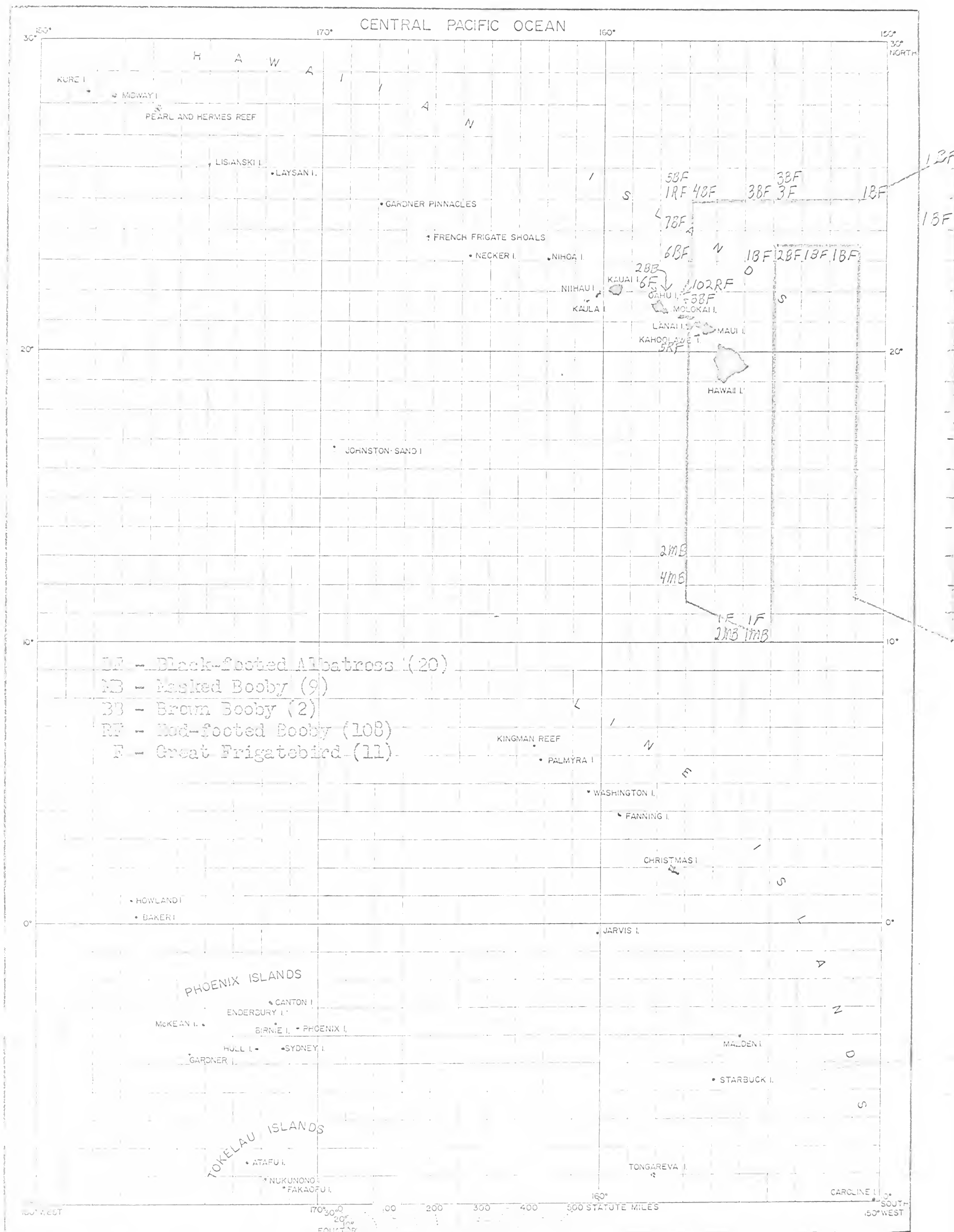




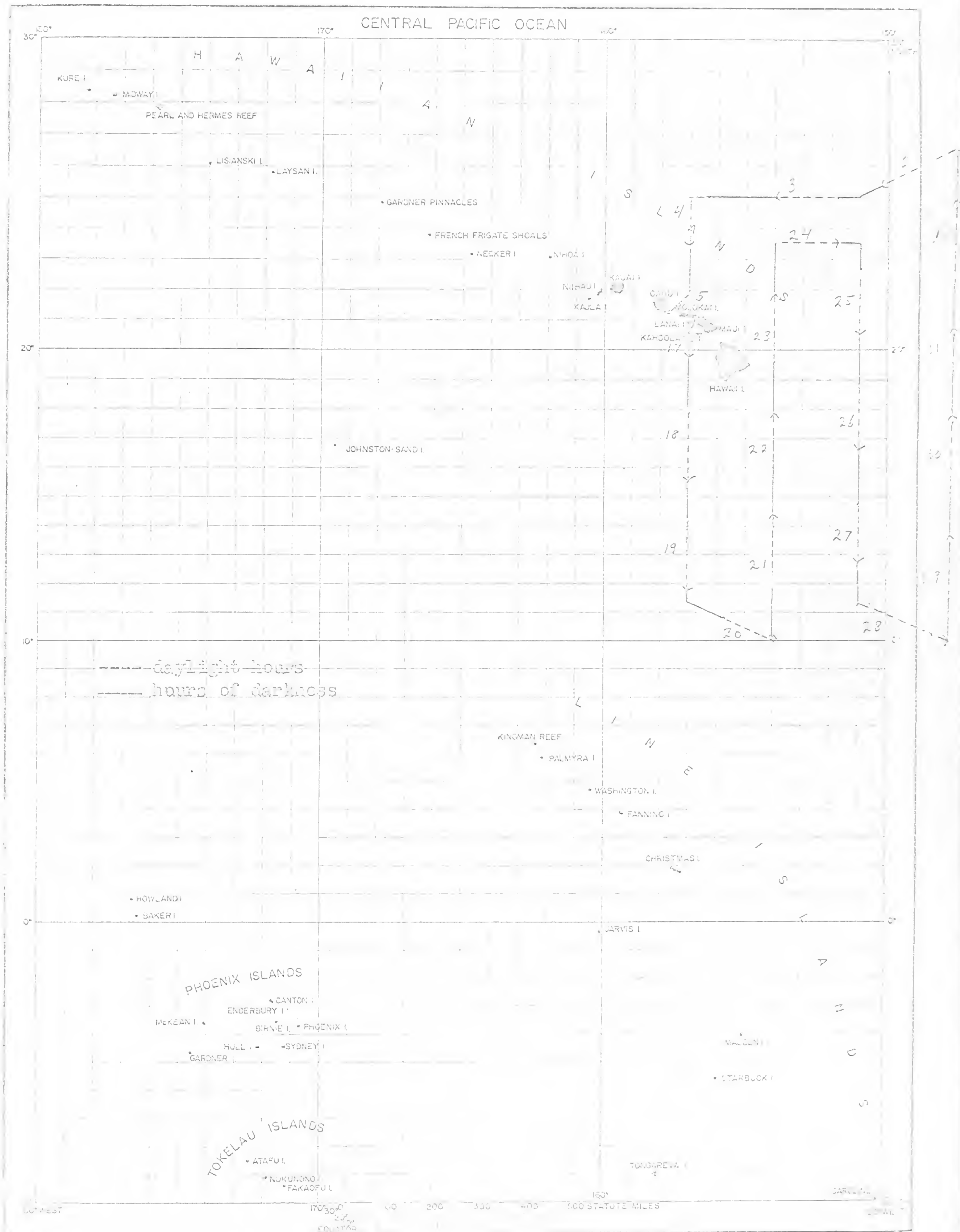




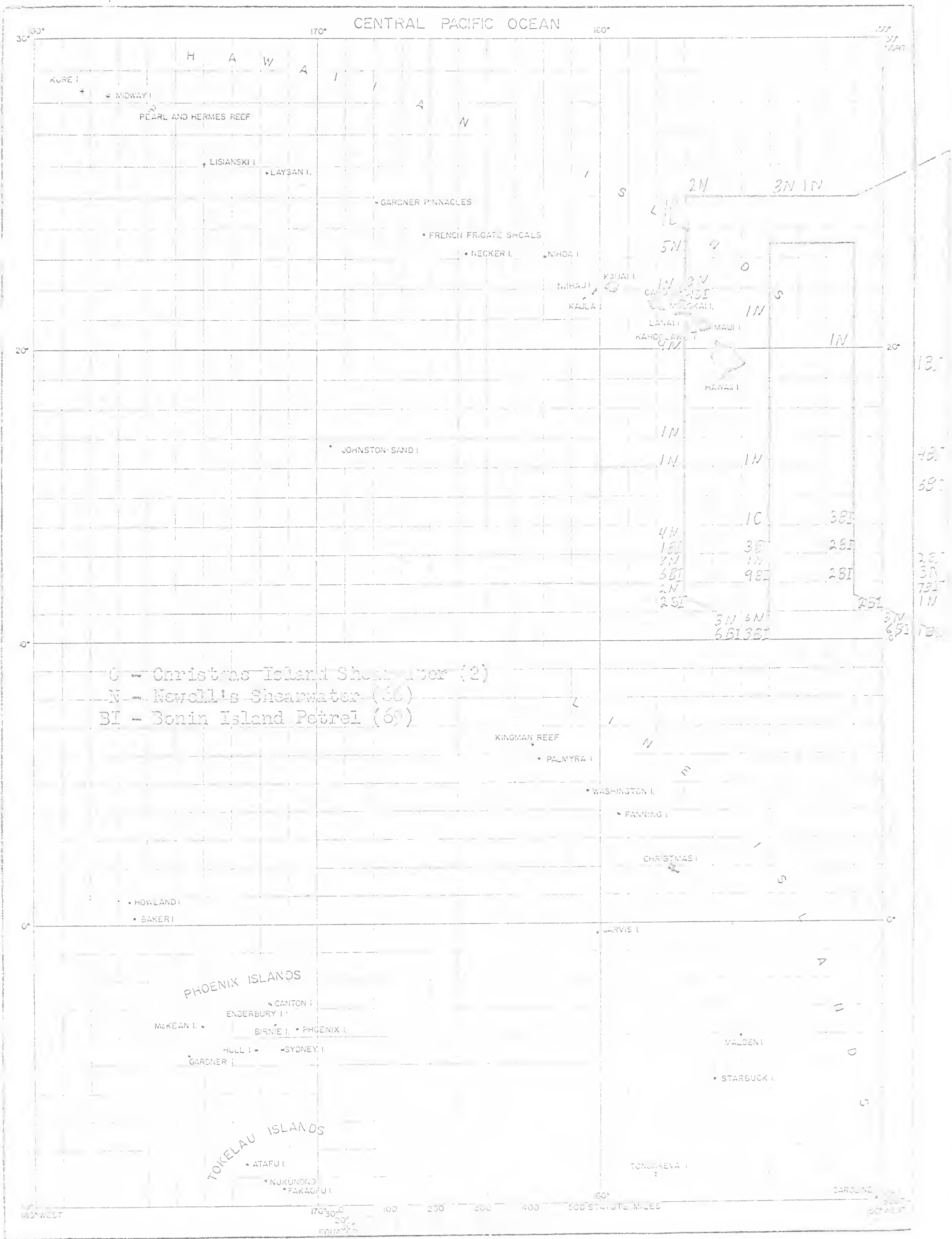


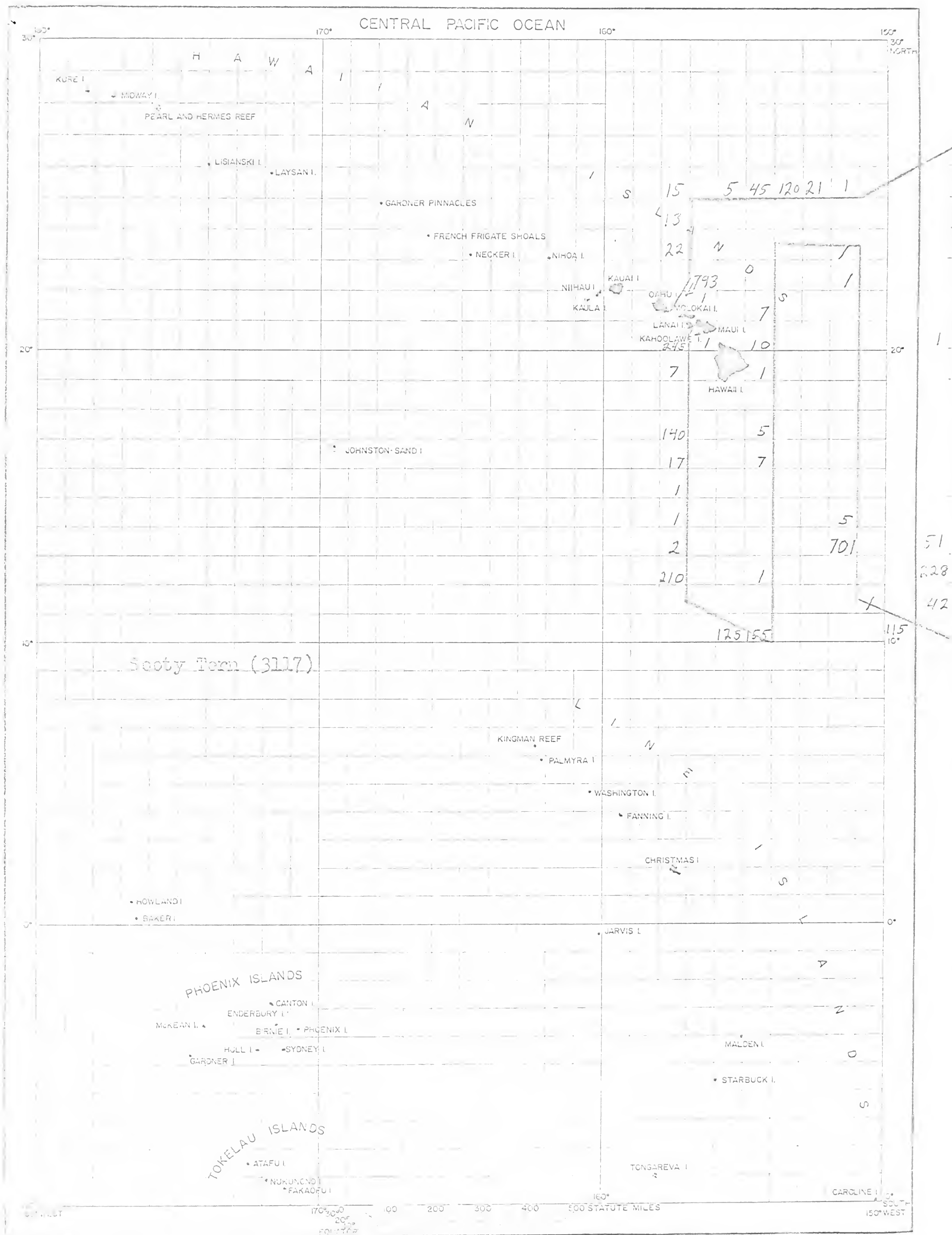


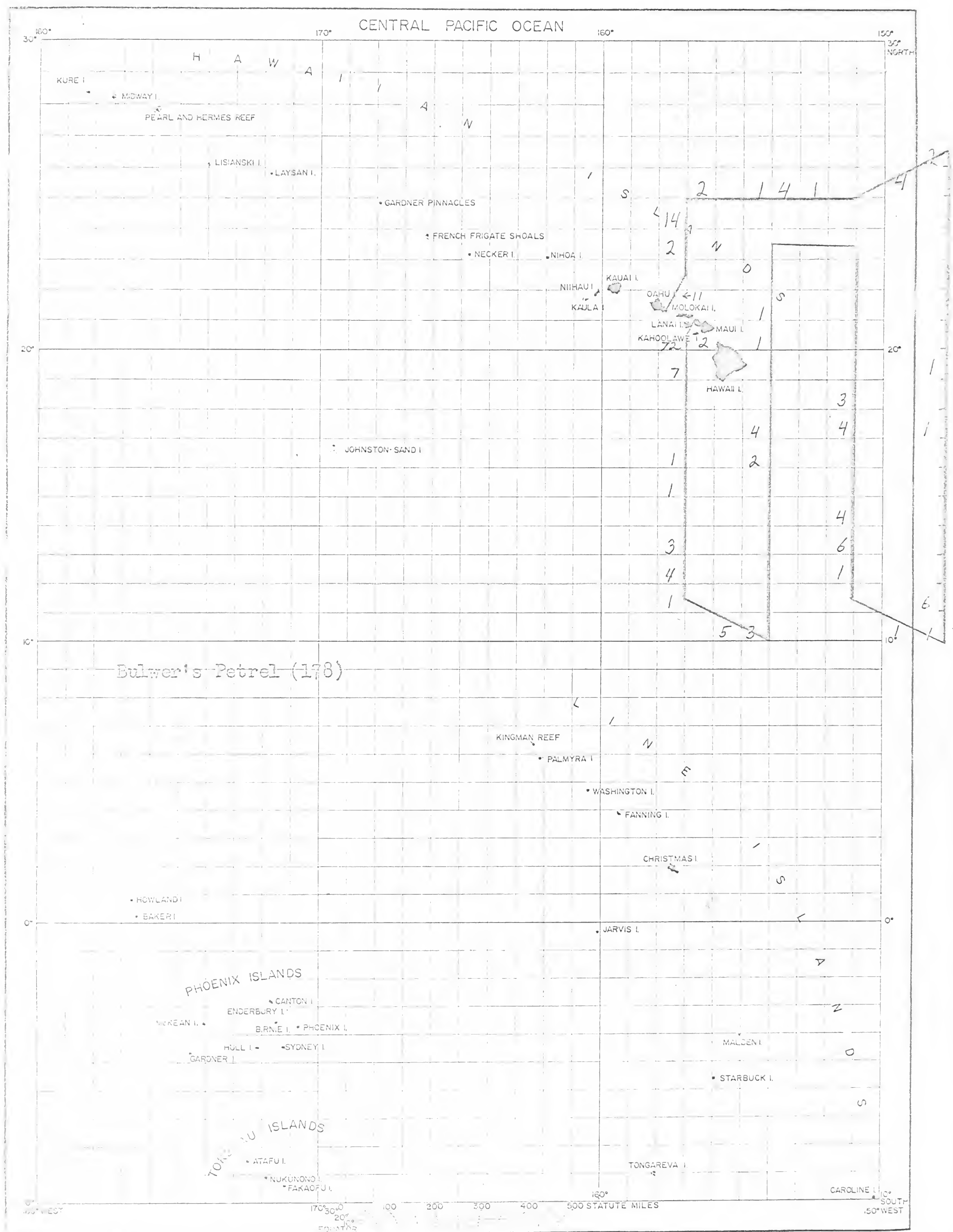
TC #4

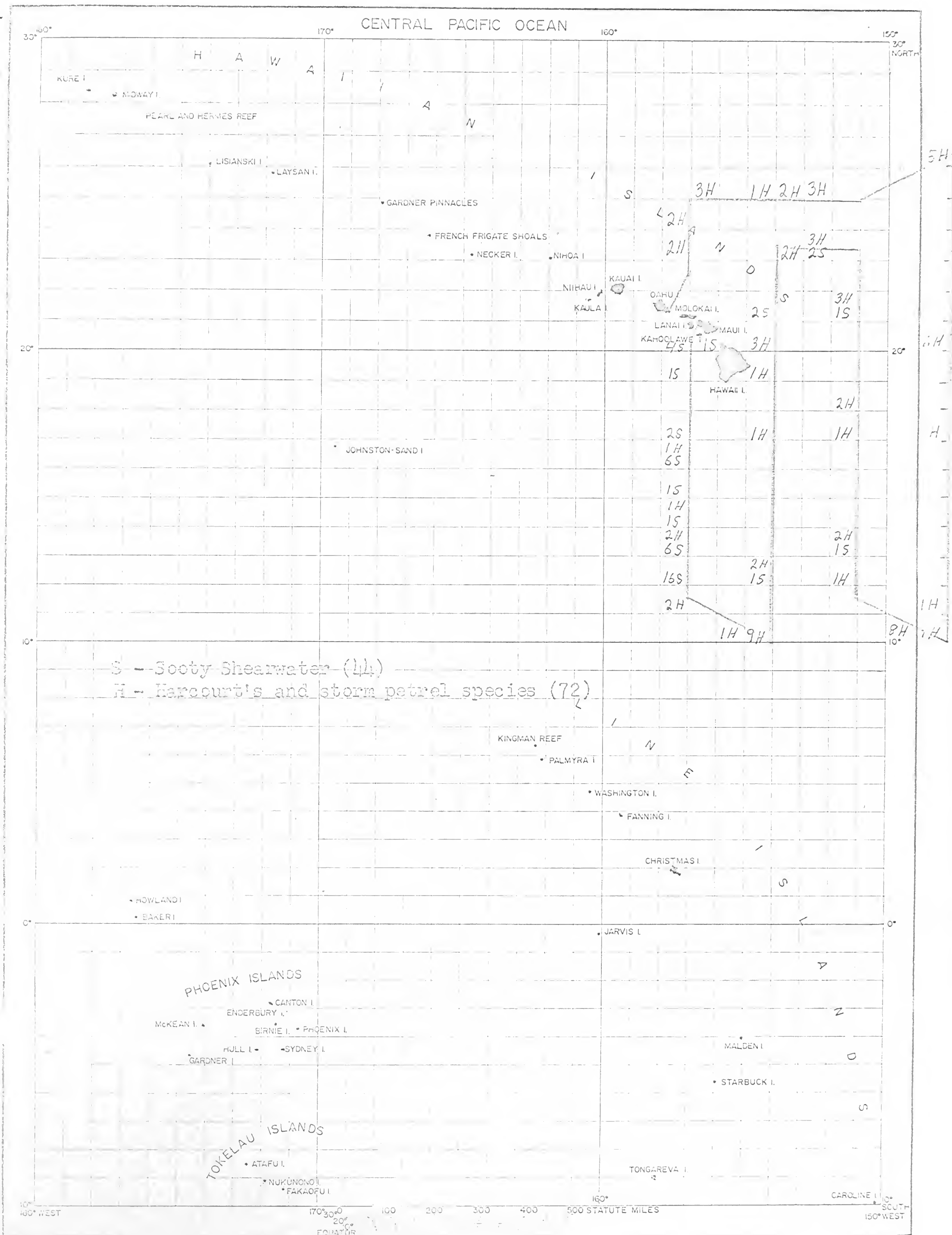




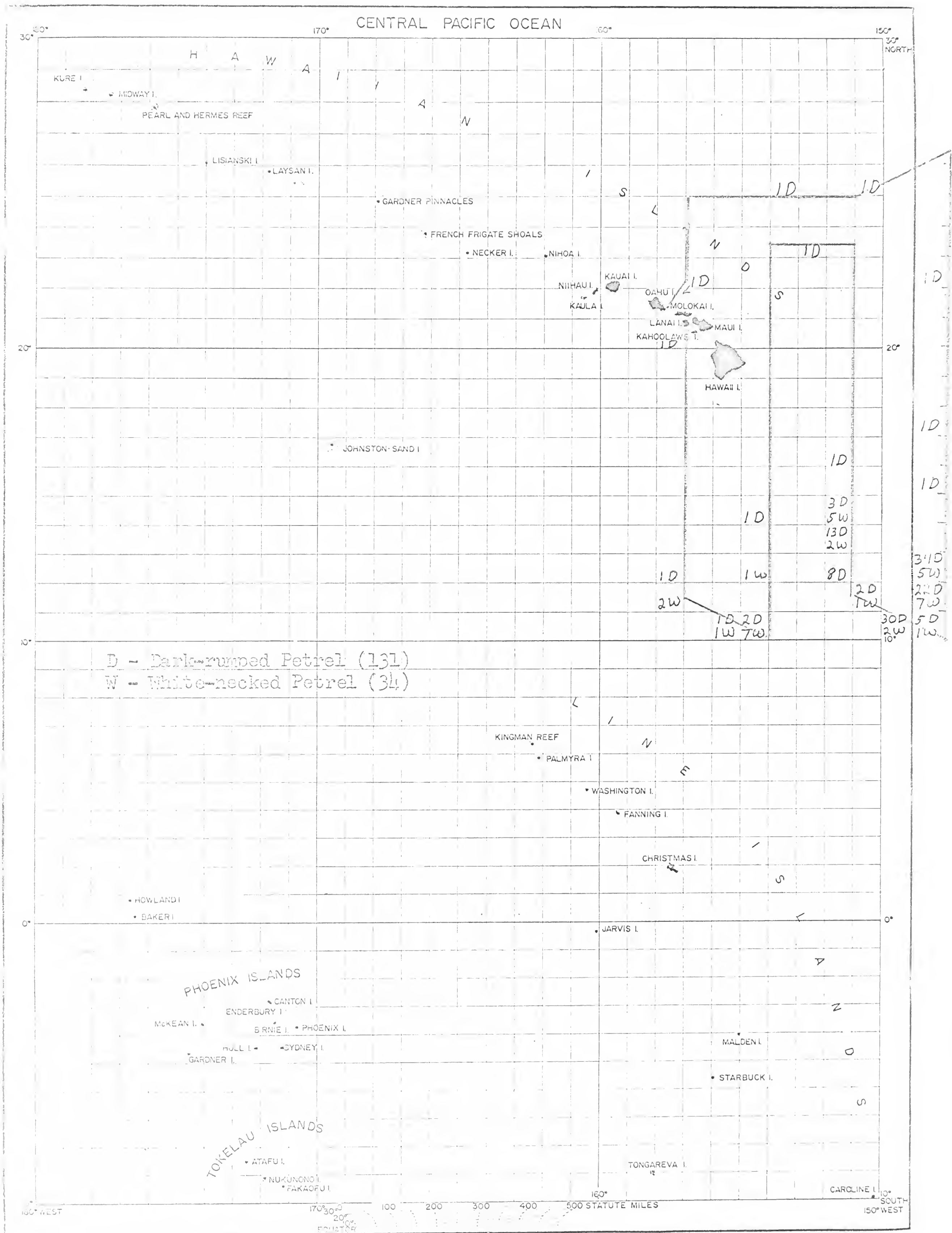


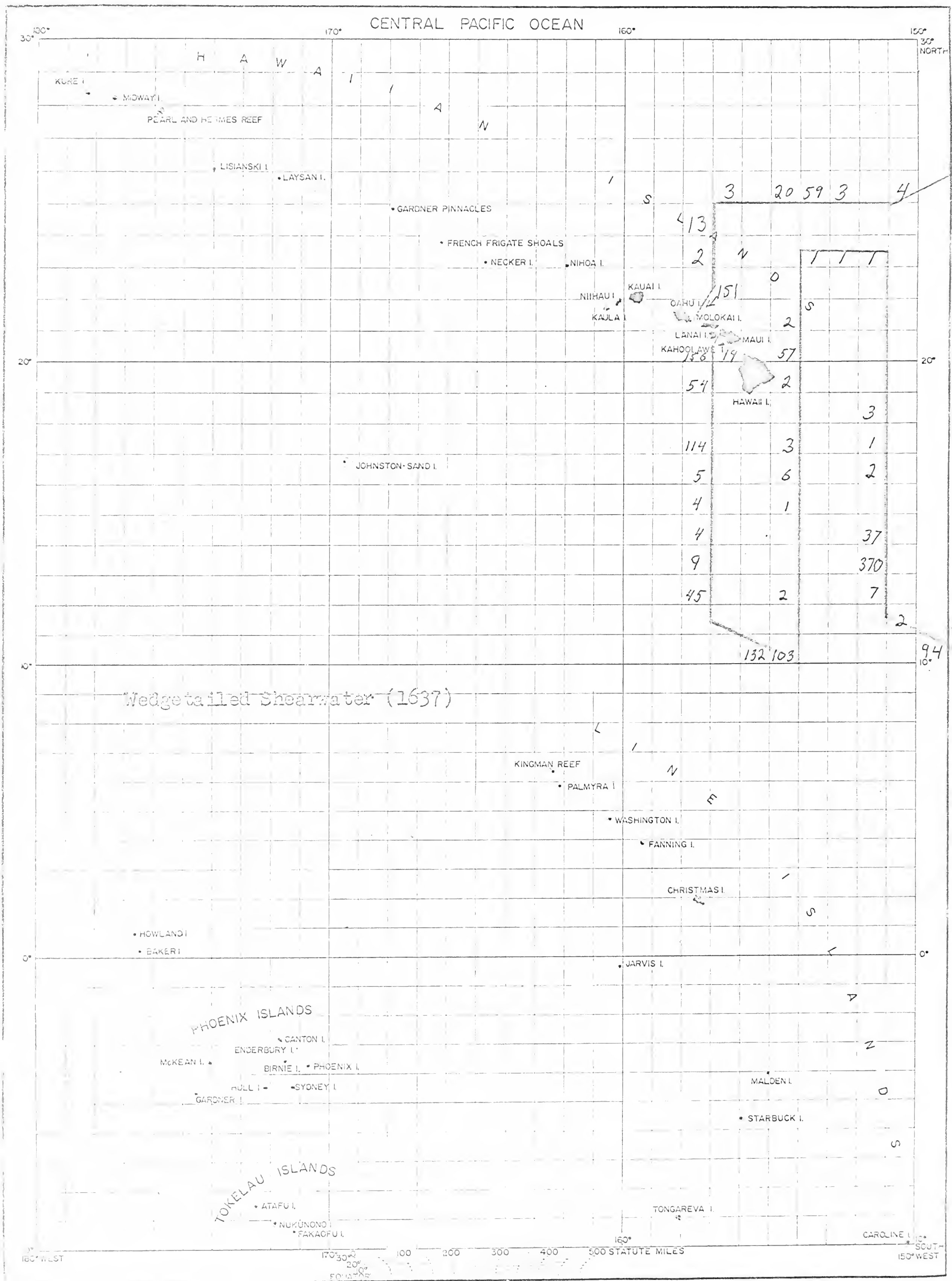


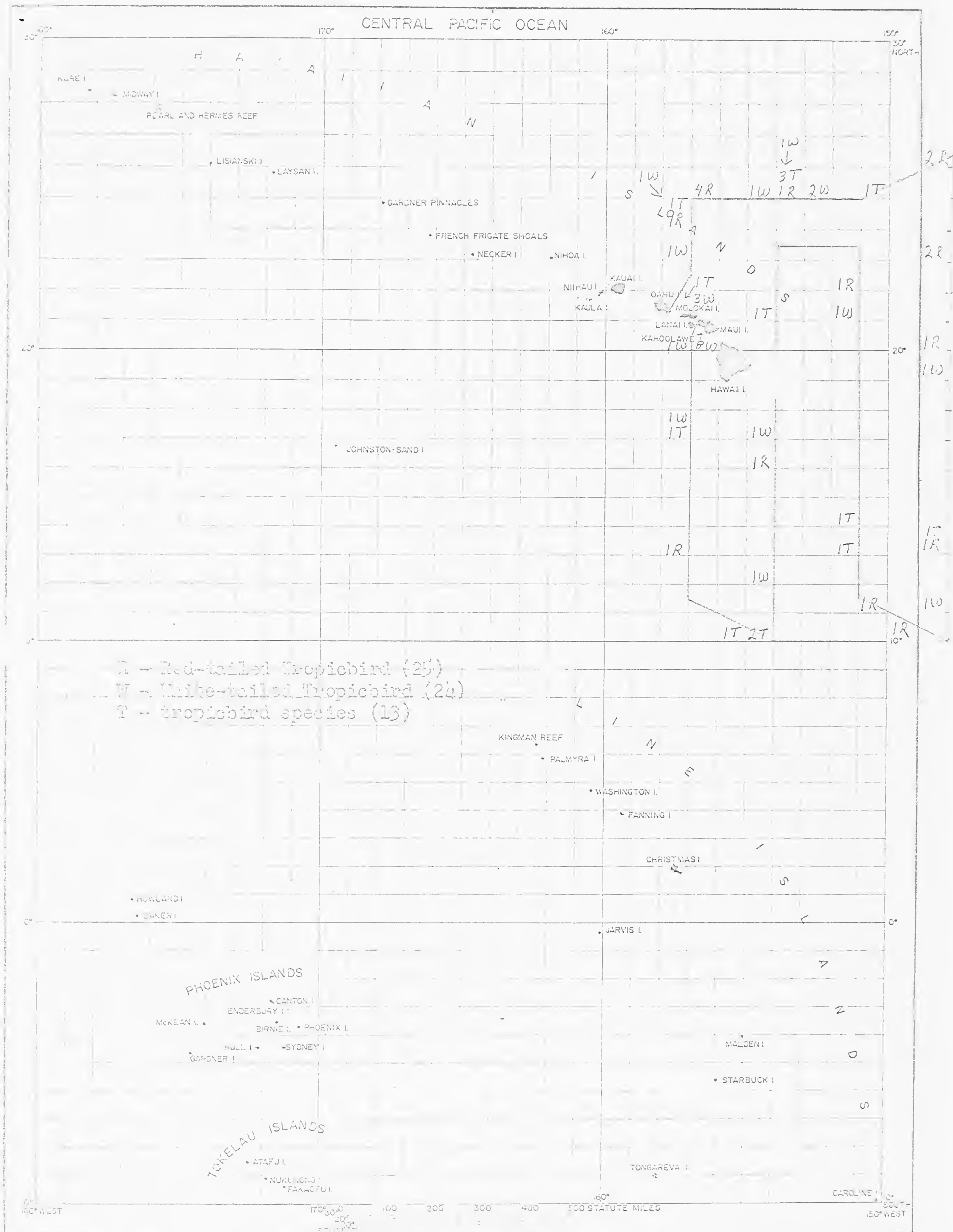




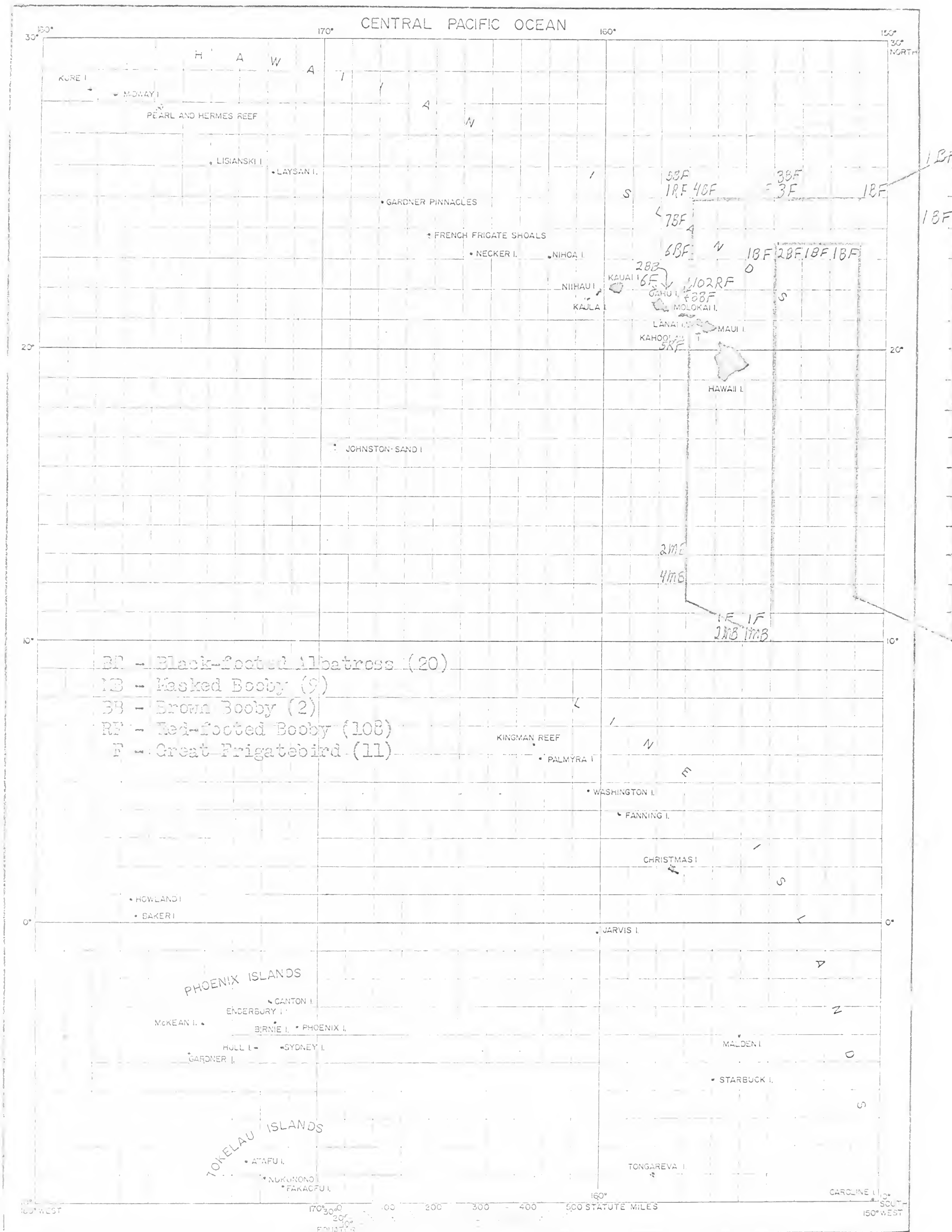














SI-MNH-955c  
3-4-64

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA SURVEY CHART C

DATE 17 May 64

TIME	LAT	LONG	PRES	WEA	VIS	SLP	DRY B	DEW PT	HUM %	TL SKY	OPA SKY	WAVES	SEA TEMP	WIND S	WIND D	SHIP COURSE/SPD.
0100																
0200																
0300																
0400																
0500																
0600																
0700																
0800	20 54	156 22														
0900	21 02	156 31														
1000	20 56	156 26														
1100	20 47	156 20														
1200	20 34	156 19														
1300	20 36	157 11														
1400	20 35	157 10														
1500	20 25	157 15														
1600	20 22	157 07														
1700	20 14	157 06														
1800	20 01	157 02														
1900	19 53	157 03														
2000	19 41	157 00														
2100	19 35	157 00														
2200	19 22	157 00														
2300	19 09	157 08														
2400	18 05	157 00														

REMARKS:

ALL TIMES LOCAL (WHISKEY); WIND DIR. IN WHOLE DEGREES; WIND SPEED IN KNOTS; TEMPERATURES IN FAHRENHEIT; VISIBILITY IN NAUTICAL MILES;  
WAVES IN WHOLE DEGREES; WAVE PERIOD IN SECONDS; WAVE HEIGHT IN WHOLE FEET; SEA LEVEL PRESSURE IN MILLIBARS

6  
38  
27  
18  
7  
9  
105



SI-MNH-955c  
3-4-64

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA SURVEY CHART C

DATE 18 May 64

TIME	LAT	LONG	PRES WEA	VIS	SLP	DRY B	DEW PT	HUM %	TL SKY	OPA SKY	WAVES	SEA TEMP	WIND S	WIND D	SHIP COURSE/SPD.
0100	18 43	157 00													
0200	18 52	157 00	00	10	1016.0	24.2	20	77	X		X-X-X	24.6	15	50	S-12
0300	18 32	157 01													
0400	18 25	157 01													
0500	18 11	157 01													
0600	17 57	157 01													
0700	17 47	157 00													
0800	17 31	157 00	01	10	1016.3	24.1	21	82	5		10-6-7	24.3	15	70	S-12
0900	17 20	157 00													
1000	17 14	157 00													
1100	17 08	157 01													
1200	16 58	157 01													
1300	16 47	157 00													
1400	16 36	157 00	03	10	1015.5	25.3	22	81	7		140-6-7	24.6	18	80	S-12
1500	16 24	157 00													
1600	16 10	157 00													
1700	15 58	157 01													
1800	15 50	157 01													
1900	15 43	157 00													
2000	15 32	157 00	03	10	1015.5	25.2	22	82	7		X-X-X	25.4	16	70	S-12
2100	15 25	157 00													
2200	15 13	157 00													
2300	15 02	156 59													
2400	14 51	156 59													

REMARKS:

ALL TIMES LOCAL (WHISKEY); WIND DIR. IN WHOLE DEGREES; WIND SPEED IN KNOTS; TEMPERATURES IN FAHRENHEIT; VISIBILITY IN NAUTICAL MILES;  
WAVES IN WHOLE DEGREES; WAVE PERIOD IN SECONDS; WAVE HEIGHT IN WHOLE FEET; SEA LEVEL PRESSURE IN MILLIBARS



SI-MNH-955c  
3-4-64

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA SURVEY CHART C

DATE 17 May 64

TIME	LAT	LONG	PRES WEA	VIS	SLP	DRY B	DEW PT	HUM %	TL SKY	OPA SKY	WAVES	SEA TEMP	WIND S	WIND D	SHIP COURSE/SPD.
0100	14 40	156 59													
0200	14 30	156 59	03	5	1014.5	25.0	22	83	8		60-5-4	25.2	15	60	5-12
0300	14 30	156 59													
0400	14 30	156 59													
0500	14 18	156 59													
0600	14 07	156 59													
0700	13 55	156 59													
0800	13 44	156 59	02	10	1014.9	26.2	23	82	7		60-6-7	25.4	20	60	5-12
0900	13 32	156 59													
1000	13 21	157 01													
1100	13 10	157 03													
1200	13 09	157 03													
1300	12 58	157 03													
1400	12 47	157 02	02	10	1012.4	25.8	23	84	5		60-6-7	26.6	16	70	5-12
1500	12 36	157 02													
1600	12 25	157 02													
1700	12 13	157 02													
1800	12 01	157 03													
1900	11 49	157 02													
2000	11 37	157 02	01	5	1012.1	27.0	23	78	3		70-6-7	27.1	20	70	5-12
2100	11 30	157 01													
2200	11 30	157 01													
2300	11 29	156 59													
2400	11 24	156 49													

REMARKS:

ALL TIMES LOCAL (WHISKEY); WIND DIR. IN WHOLE DEGREES; WIND SPEED IN KNOTS; TEMPERATURES IN FAHRENHEIT; VISIBILITY IN NAUTICAL MILES;  
WAVES IN WHOLE DEGREES; WAVE PERIOD IN SECONDS; WAVE HEIGHT IN WHOLE FEET; SEA LEVEL PRESSURE IN MILLIBARS



SI-MNH-955c  
3-4-64

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA SURVEY CHART C

DATE 20 May 64

TIME	LAT	LONG	PRES	WEA	VIS	SLP	DRY B	DEW PT	HUM %	TL SKY	OPA SKY	WAVES	SEA TEMP	WIND S	WIND D	SHIP COURSE/SPD.
0100	11 19	156 38														
0200	11 14	156 27	01		10	1011.3	26.9	24	83	1		80-6-7	27.3	16	80	SE-12
0300	11 09	156 17														
0400	11 04	156 07														
0500	10 59	155 57														
0600	10 55	155 47														
0700	10 50	155 37														
0800	10 46	155 27	15		10	1012.9	26.9	24	83	6		90-6-7	27.2	13	90	SE-12
0900	10 41	155 17														
1000	10 37	155 07														
1100	10 32	154 57														
1200	10 28	154 47														
1300	10 21	154 38														
1400	10 15	154 26	02		10	1010.9	27.8	24	79	3		70-6-7	27.2	12	80	SE-12
1500	10 09	154 16														
1600	10 03	154 06														
1700	10 00	154 00														
1800	10 02	154 50														
1900	10 09	154 01														
2000	10 20	154 01	02		10	1011.9	26.7	23	79	2		70-6-7	27.2	22	80	N-12
2100	10 32	154 00														
2200	10 44	154 00														
2300	10 55	154 00														
2400	11 06	154 00														

REMARKS:

ALL TIMES LOCAL (WHISKEY); WIND DIR. IN WHOLE DEGREES; WIND SPEED IN KNOTS; TEMPERATURES IN FAHRENHEIT; VISIBILITY IN NAUTICAL MILES;  
WAVES IN WHOLE DEGREES; WAVE PERIOD IN SECONDS; WAVE HEIGHT IN WHOLE FEET; SEA LEVEL PRESSURE IN MILLIBARS



SI-MNH-955c  
3-4-64

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA SURVEY CHART C

DATE 21 May 64

TIME	LAT	LONG	PRES	WEA	VIS	SLP	DRY B	DEW PT	HUM %	TL SKY	OPA SKY	WAVES	SEA TEMP	WIND S	WIND D	SHIP COURSE/SPD.
0100	11 18	153 59														
0200	11 30	153 59	50		5	1012.0	26.3	23	81	8		60-6-7	27.0	20	60	N-12
0300	11 32	153 59														
0400	11 37	153 59														
0500	11 49	153 59														
0600	12 00	153 58														
0700	12 12	153 58														
0800	12 24	153 59	02		10	1014.0	25.8	23	84	1		50-9-9	26.3	23	70	N-12
0900	12 35	153 59														
1000	12 46	153 59														
1100	12 58	154 00														
1200	13 04	154 00														
1300	13 05	154 00														
1400	13 17	154 00	02		10	1013.1	26.1	22	74	2		60-6-7	25.1	24	70	N-12
1500	13 29	154 00														
1600	13 40	154 00														
1700	13 52	154 01														
1800	14 03	154 01														
1900	14 14	154 01														
2000	14 25	154 01	01		10	1015.0	25.3	21	77	1		80-6-7	24.9	24	80	N-12
2100	14 29	154 01														
2200	14 30	154 01														
2300	14 34	154 01														
2400	14 46	154 00														

REMARKS:

ALL TIMES LOCAL (WHISKEY); WIND DIR. IN WHOLE DEGREES; WIND SPEED IN KNOTS; TEMPERATURES IN FAHRENHEIT; VISIBILITY IN NAUTICAL MILES;  
WAVES IN WHOLE DEGREES; WAVE PERIOD IN SECONDS; WAVE HEIGHT IN WHOLE FEET; SEA LEVEL PRESSURE IN MILLIBARS



SI-MNH-955c  
3-4-64

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA SURVEY CHART C

DATE 22 May 64

TIME	LAT	LONG	PRES WEA	VIS	SLP	DRY B	DEW PT	HUM %	TL SKY	OPA SKY	WAVES	SEA TEMP	WIND S	WIND D	SHIP COURSE/SPD.
0100	14 58	154 00													
0200	15 09	154 00	02	25	1014.6	24.4	20	77	1		80-6-7	24.6	24	80	N-12
0300	15 20	154 00													
0400	15 31	154 00													
0500	15 42	154 00													
0600	15 53	153 59													
0700	16 00	153 59													
0800	16 00	153 59	02	10	1015.5	25.1	21	77	4		70-6-7	24.8	20	80	N-12
0900	16 11	153 59													
1000	16 23	153 59													
1100	16 35	153 59													
1200	16 46	153 59													
1300	16 58	153 59													
1400	17 10	153 59	03	10	1015.2	24.8	21	79	2						
1500	17 22	153 59									70-6-7	24.9	20	70	N-12
1600	17 32	154 00													
1700	17 32	154 00													
1800	17 44	154 00													
1900	17 56	154 00													
2000	18 08	154 00	01	10	1016.0	24.4	20	77	2		70-6-7	24.1	22	60	N-12
2100	18 13	154 00													
2200	18 25	154 00													
2300	18 37	154 00													
2400	18 48	154 00													

REMARKS:

ALL TIMES LOCAL (WHISKEY); WIND DIR. IN WHOLE DEGREES; WIND SPEED IN KNOTS; TEMPERATURES IN FAHRENHEIT; VISIBILITY IN NAUTICAL MILES;  
WAVES IN WHOLE DEGREES; WAVE PERIOD IN SECONDS; WAVE HEIGHT IN WHOLE FEET; SEA LEVEL PRESSURE IN MILLIBARS



SI-MNH-955c  
3-4-64

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA SURVEY CHART C

DATE 23 May 64

TIME	LAT	LONG	PRES	WEA	VIS	SLP	DRY B	DEW PT	HUM %	TL SKY	OPA SKY	WAVES	SEA TEMP	WIND S	WIND D	SHIP COURSE/SPD.
0100	18 59	154 00														
0200	19 10	154 00	50		5	1016.0	22.9	20	83	8		70-6-7	24.2	20	90	N-12
0300	19 10	154 00														
0400	19 20	154 00														
0500	19 31	154 00														
0600	19 42	154 00														
0700	19 53	154 00														
0800	20 04	154 00	01		5	1017.5	23.0	20	83	7		60-8-9	23.4	29	90	N-12
0900	20 16	154 00														
1000	20 27	154 00														
1100	20 38	154 00														
1200	20 49	154 01														
1300	20 49	154 01														
1400	20 58	154 00	25		5	1018.0	24.2	19	73	7		70-8-9	23.3	28	90	N-12
1500	21 10	154 00														
1600	21 21	154 01														
1700	21 32	154 01														
1800	21 44	154 01														
1900	21 56	154 01														
2000	21 59	154 02	01		5	1019.6	22.8	18	75	7		70-8-9	23.2	20	90	N-12
2100	21 59	154 02														
2200	22 09	154 01														
2300	22 19	154 01														
2400	22 30	154 01														

REMARKS:

ALL TIMES LOCAL (WHISKEY); WIND DIR. IN WHOLE DEGREES; WIND SPEED IN KNOTS; TEMPERATURES IN FAHRENHEIT; VISIBILITY IN NAUTICAL MILES;  
WAVES IN WHOLE DEGREES; WAVE PERIOD IN SECONDS; WAVE HEIGHT IN WHOLE FEET; SEA LEVEL PRESSURE IN MILLIBARS



SI-MNH-955c  
3-4-64

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA SURVEY CHART C

DATE 24 May 64

TIME	LAT	LONG	PRES	WEA	VIS	SLP	DRY B	DEW PT	HUM %	TL SKY	OPA SKY	WAVES	SEA TEMP	WIND S	WIND D	SHIP COURSE/SPD.
0100	22 40	154 00														
0200	22 51	154 00	02		5	1020.0	27.8	19	79	8		70-8-9	23.1	26	80	N-12
0300	23 03	154 00														
0400	23 15	154 00														
0500	23 27	154 00														
0600	23 30	154 00														
0700	23 30	154 00														
0800	23 29	153 47	14		5	1021.5	21.8	18	79	7		80-8-7	23.0	18	80	N-12
0900	23 28	153 34														
1000	23 28	153 22														
1100	23 27	153 12														
1200	23 26	153 02														
1300	23 27	153 52														
1400	23 27	153 43	02		10	1021.1	22.2	17	73	8		70-10-9	22.9	23	90	E-12
1500	23 28	152 33														
1600	23 28	152 23														
1700	23 29	152 14														
1800	23 29	152 04														
1900	23 29	151 54														
2000	23 29	151 45	01		10	1021.8	21.6	17	78	6		70-10-9	22.8	20	70	E-12
2100	23 30	151 35														
2200	23 30	151 26														
2300	23 30	151 16														
2400	23 30	151 07														

REMARKS:

ALL TIMES LOCAL (WHISKEY); WIND DIR. IN WHOLE DEGREES; WIND SPEED IN KNOTS; TEMPERATURES IN FAHRENHEIT; VISIBILITY IN NAUTICAL MILES;  
WAVES IN WHOLE DEGREES; WAVE PERIOD IN SECONDS; WAVE HEIGHT IN WHOLE FEET; SEA LEVEL PRESSURE IN MILLIBARS



SI-MNH-955c  
3-4-64

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA SURVEY CHART C

DATE 25 May 64

TIME	LAT	LONG	PRES	WEA	VIS	SLP	DRY B	DEW PT	HUM %	TL SKY	OPA SKY	WAVES	SEA TEMP	WIND S	WIND D	SHIP COURSE/SPD.
0100	23 30	151 00														
0200	23 28	151 00	03		5	1022.0	21.4	16	72	8		70-10-9	22.6	16	70	5-12
0300	23 16	150 59														
0400	23 04	150 58														
0500	22 52	150 58														
0600	22 40	150 57														
0700	22 29	150 57														
0800	22 18	150 58	02		10	1020.9	21.9	17	74	7		70-6-5	23.1	12	100	5-12
0900	22 07	150 58														
1000	22 01	150 58														
1100	21 59	150 59														
1200	21 48	150 59														
1300	21 36	151 00														
1400	21 25	151 01	02		5	1020.0	22.3	19	81	7		100-6-7	23.1	14	70	5-12
1500	21 13	151 02														
1600	21 01	151 03														
1700	20 49	151 03														
1800	20 37	151 04														
1900	20 28	151 04														
2000	20 28	151 04	03		10	1019.5	23.1	19	77	8		70-6-7	22.9	12	90	5-12
2100	20 23	151 03														
2200	20 11	151 03														
2300	20 01	151 03														
2400	19 50	151 03														

REMARKS:

ALL TIMES LOCAL (WHISKEY); WIND DIR. IN WHOLE DEGREES; WIND SPEED IN KNOTS; TEMPERATURES IN FAHRENHEIT; VISIBILITY IN NAUTICAL MILES;  
WAVES IN WHOLE DEGREES; WAVE PERIOD IN SECONDS; WAVE HEIGHT IN WHOLE FEET; SEA LEVEL PRESSURE IN MILLIBARS



SI-MNH-955c  
3-4-64

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA SURVEY CHART C

DATE

26 May 64

TIME	LAT	LONG	PRES	WEA	VIS	SLP	DRY B	DEW PT	HUM %	TL SKY	OPA SKY	WAVES	SEA TEMP	WIND S	WIND D	SHIP COURSE/SPD.
0100	19 38	151 03														
0200	19 26	151 03	02		10	1017.0	23.2	19	77	8		70-6-7	23.4	19	70	5-12
0300	19 14	151 03														
0400	19 02	151 03														
0500	18 55	151 03														
0600	18 53	151 03														
0700	18 44	151 03														
0800	18 32	151 03	14		10	1018.0	23.8	20	79	6		70-6-7	23.5	18	80	5-12
0900	18 21	151 02														
1000	18 09	151 02														
1100	17 58	151 02														
1200	17 45	151 01														
1300	17 34	151 01														
1400	17 30	151 00	02		10	1016.8	24.5	21	80	4		60-6-7	24.2	18	70	5-12
1500	17 27	151 00														
1600	17 14	150 59														
1700	17 01	150 58														
1800	16 48	150 58														
1900	16 37	150 57														
2000	16 24	150 58	01		10	1016.0	24.4	21	81	3		60-6-5	24.2	14	80	5-12
2100	16 19	150 58														
2200	16 09	150 59														
2300	15 59	150 59														
2400	15 58	150 59														

REMARKS:

ALL TIMES LOCAL (WHISKEY); WIND DIR. IN WHOLE DEGREES; WIND SPEED IN KNOTS; TEMPERATURES IN FAHRENHEIT; VISIBILITY IN NAUTICAL MILES;  
WAVES IN WHOLE DEGREES; WAVE PERIOD IN SECONDS; WAVE HEIGHT IN WHOLE FEET; SEA LEVEL PRESSURE IN MILLIBARS



SI-MNH-955c  
3-4-64

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA SURVEY CHART C

DATE 27 May 64

TIME	LAT	LONG	PRES	WEA	VIS	SLP	DRY B	DEW PT	HUM %	TL SKY	OPA SKY	WAVES	SEA TEMP	WIND S	WIND D	SHIP COURSE/SPD.
0100	15 47	151 00														
0200	15 35	151 00	02		10	1015.0	23.9	21	83	3		60-6-5	24.1	18	70	S-12
0300	15 22	151 00														
0400	15 10	151 01														
0500	14 58	151 02														
0600	14 45	151 01														
0700	14 33	151 01														
0800	14 30	151 01	03		10	1015.5	25.4	21	77	4		50-6-7	25.8	17	50	S-12
0900	14 24	151 00														
1000	14 12	150 59														
1100	13 59	150 59														
1200	13 48	150 58														
1300	13 35	150 58														
1400	13 23	150 58	03		10	1014.0	26.0	22	78	8		50-6-7	26.1	18	50	S-12
1500	13 10	150 59														
1600	12 58	150 59														
1700	12 58	150 59														
1800	12 47	150 59														
1900	12 35	150 59														
2000	12 25	150 59	02		5	1015.0	25.4	22	81	8		50-6-7	26.4	18	50	S-12
2100	12 20	150 59														
2200	12 08	150 59														
2300	11 55	151 00														
2400	11 43	151 00														

REMARKS:

ALL TIMES LOCAL (WHISKEY); WIND DIR. IN WHOLE DEGREES; WIND SPEED IN KNOTS; TEMPERATURES IN FAHRENHEIT; VISIBILITY IN NAUTICAL MILES;  
WAVES IN WHOLE DEGREES; WAVE PERIOD IN SECONDS; WAVE HEIGHT IN WHOLE FEET; SEA LEVEL PRESSURE IN MILLIBARS



SI-MNH-955c  
3-4-64

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA SURVEY CHART C

DATE 28 May 64

TIME	LAT	LONG	PRES	WEA	VIS	SLP	DRY B	DEW PT	HUM %	TL SKY	OPA SKY	WAVES	SEA TEMP	WIND S	WIND D	SHIP COURSE/SPD.
0100	11 30	151 00														
0200	11 23	151 00	50		5	1014.0	75.7	23	84	8		60-6-7	26.0	19	70	S-12
0300	11 23	150 59														
0400	11 18	150 50														
0500	11 13	150 40														
0600	11 09	150 30														
0700	11 05	150 21														
0800	11 00	150 10	01		10	1014.0	76.2	23	82	6		70-6-5	26.1	12	90	SE-12
0900	10 55	149 58														
1000	10 51	149 48														
1100	10 48	149 38														
1200	10 45	149 28														
1300	10 40	149 19														
1400	10 35	149 10	02		10	1012.7	26.9	24	83	8		60-6-7	26.4	16	100	SE-12
1500	10 30	149 00														
1600	10 26	148 51														
1700	10 21	148 41														
1800	10 17	148 32														
1900	10 12	148 22														
2000	10 07	148 13	03		10	1013.7	26.1	24	81	8		100-6-7	26.6	17	110	SE-12
2100	10 04	148 08														
2200	10 04	148 08														
2300	10 12	148 08														
2400	10 24	148 08														

REMARKS:

ALL TIMES LOCAL (WHISKEY); WIND DIR. IN WHOLE DEGREES; WIND SPEED IN KNOTS; TEMPERATURES IN FAHRENHEIT; VISIBILITY IN NAUTICAL MILES;  
WAVES IN WHOLE DEGREES; WAVE PERIOD IN SECONDS; WAVE HEIGHT IN WHOLE FEET; SEA LEVEL PRESSURE IN MILLIBARS



SI-MNH-955c  
3-4-64

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA SURVEY CHART C

DATE 29 May 64

TIME	LAT	LONG	PRES	WEA	VIS	SLP	DRY B	DEW PT	HUM %	TL SKY	OPA SKY	WAVES	SEA TEMP	WIND S	WIND D	SHIP COURSE/SPD.
0100	10 35	148 08														
0200	10 47	148 08	02		10	1013.2	26.2	24	87	6		110-5-5	26.6	09	110	N-12
0300	10 58	148 08														
0400	11 10	148 08														
0500	11 21	148 08														
0600	11 32	148 08														
0700	11 38	148 08														
0800	11 41	148 08	02		5	1014.9	25.8	23	84	8		50-6-7	26.2	17	110	N-12
0900	11 54	148 08														
1000	12 06	148 08														
1100	12 16	148 08														
1200	12 26	148 08														
1300	12 37	148 07														
1400	12 49	148 07	02		10	1014.7	26.9	24	83	6		60-6-7	25.8	18	60	N-12
1500	13 00	148 06														
1600	13 00	148 06														
1700	13 08	148 05														
1800	13 18	148 05														
1900	13 30	148 05														
2000	13 42	148 04	25		10	1015.8	25.6	22	80	8		60-7-9	25.7	17	60	N-12
2100	13 47	148 03														
2200	13 59	148 02														
2300	14 11	148 01														
2400	14 23	148 00														

REMARKS:

ALL TIMES LOCAL (WHISKEY); WIND DIR. IN WHOLE DEGREES; WIND SPEED IN KNOTS; TEMPERATURES IN FAHRENHEIT; VISIBILITY IN NAUTICAL MILES;  
WAVES IN WHOLE DEGREES; WAVE PERIOD IN SECONDS; WAVE HEIGHT IN WHOLE FEET; SEA LEVEL PRESSURE IN MILLIBARS



SI-MNH-955c  
3-4-64

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA SURVEY CHART C

DATE 30 May 64

TIME	LAT	LONG	PRES WEA	VIS	SLP	DRY B	DEW PT	HUM %	TL SKY	OPA SKY	WAVES	SEA TEMP	WIND S	WIND D	SHIP COURSE/SPD.
0100	14 30	147 58													
0200	14 31	147 58	01	5	1015.0	25.0	22	83	7		60-7-9	25.5	16	60	N-12
0300	14 44	147 57													
0400	14 56	147 55													
0500	15 08	147 54													
0600	15 20	147 54													
0700	15 32	147 53													
0800	15 46	147 55	02	5	1016.0	25.0	21	78	7		70-6-7	24.8	20	90	N-12
0900	15 58	147 56													
1000	16 01	147 56													
1100	16 05	147 57													
1200	16 17	147 57													
1300	16 30	147 58													
1400	16 42	147 59	02	10	1016.0	24.5	21	80	6		70-6-4	24.5	16	70	N-12
1500	16 54	148 00													
1600	17 06	148 00													
1700	17 19	148 02													
1800	17 31	148 04													
1900	17 33	148 04													
2000	17 41	148 03	01	10	1017.0	24.0	21	83	6		70-6-4	24.1	19	80	N-12
2100	17 47	148 02													
2200	17 59	148 01													
2300	18 11	148 00													
2400	18 23	148 00													

REMARKS:

ALL TIMES LOCAL (WHISKEY); WIND DIR. IN WHOLE DEGREES; WIND SPEED IN KNOTS; TEMPERATURES IN FAHRENHEIT; VISIBILITY IN NAUTICAL MILES;  
WAVES IN WHOLE DEGREES; WAVE PERIOD IN SECONDS; WAVE HEIGHT IN WHOLE FEET; SEA LEVEL PRESSURE IN MILLIBARS



SI-MNH-955c  
3-4-64

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA SURVEY CHART C

DATE

31 May 64

TIME	LAT	LONG	PRES	WEA	VIS	SLP	DRY B	DEW PT	HUM %	TL SKY	OPA SKY	WAVES	SEA TEMP	WIND S	WIND D	SHIP COURSE/SPD.
0100	18 35	147 59														
0200	18 47	147 58	01		10	1017.0	23.6	20	80	5		70-6-4	23.8	14	70	N-12
0300	18 59	147 57														
0400	18 59	147 57														
0500	19 07	147 57														
0600	19 19	147 56														
0700	19 30	147 56														
0800	19 41	147 57	02		10	1019.2	23.4	20	81	2		60-6-5	23.8	18	60	N-12
0900	19 52	147 57														
1000	20 00	147 57														
1100	20 14	147 58														
1200	20 28	147 59														
1300	20 30	147 59														
1400	20 30	147 59	02		25	1019.2	23.8	19	75	3		80-6-4	23.8	15	70	N-12
1500	20 30	147 59														
1600	20 30	147 59														
1700	20 30	147 59														
1800	20 30	147 59														
1900	20 30	147 57														
2000	20 43	147 56	02		25	1020.0	23.7	20	79	2		60-6-7	23.7	16	60	N-12
2100	20 48	147 56														
2200	21 00	147 57														
2300	21 12	147 57														
2400	21 25	147 57														

REMARKS:

ALL TIMES LOCAL (WHISKEY); WIND DIR. IN WHOLE DEGREES; WIND SPEED IN KNOTS; TEMPERATURES IN FAHRENHEIT; VISIBILITY IN NAUTICAL MILES;  
WAVES IN WHOLE DEGREES; WAVE PERIOD IN SECONDS; WAVE HEIGHT IN WHOLE FEET; SEA LEVEL PRESSURE IN MILLIBARS



SI-MNH-955c  
3-4-64

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA SURVEY CHART C

DATE 1 June 64

TIME	LAT	LONG	PRES	WEA	VIS	SLP	DRY B	DEW PT	HUM %	TL SKY	OPA SKY	WAVES	SEA TEMP	WIND S	WIND D	SHIP COURSE/SPD.
0100	21 37	147 57														
0200	21 49	147 58	02		25	1020.7	23.1	18	73	2		80-6-7	23.1	16	80	N-12
0300	22 02	147 58														
0400	22 03	147 58														
0500	22 07	147 58														
0600	22 20	147 58														
0700	22 33	147 58														
0800	22 45	147 58	02		25	1022.4	23.0	17	70	2		90-6-4	23.0	15	90	N-12
0900	22 58	147 58														
1000	23 11	147 59														
1100	23 24	147 59														
1200	23 32	147 59														
1300	23 34	147 59														
1400	23 46	147 59	02		25	1022.1	23.7	19	79	2		100-6-4	23.7	12	100	N-12
1500	23 58	147 59														
1600	24 09	148 00														
1700	24 21	148 00														
1800	24 33	148 00														
1900	24 45	148 00														
2000	24 54	147 59	02		25	1012.0	23.7	19	77	2		120-5-2	23.3	12	120	N-12
2100	25 00	147 59														
2200	25 00	147 59														
2300	25 09	147 58														
2400	25 21	147 57														

REMARKS:

ALL TIMES LOCAL (WHISKEY); WIND DIR. IN WHOLE DEGREES; WIND SPEED IN KNOTS; TEMPERATURES IN FAHRENHEIT; VISIBILITY IN NAUTICAL MILES;  
WAVES IN WHOLE DEGREES; WAVE PERIOD IN SECONDS; WAVE HEIGHT IN WHOLE FEET; SEA LEVEL PRESSURE IN MILLIBARS



SI-MNH-955c  
3-4-64

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA SURVEY CHART C

DATE 2 June 64

TIME	LAT	LONG	PRES	WEA	VIS	SLP	DRY B	DEW PT	HUM %	TL SKY	OPA SKY	WAVES	SEA TEMP	WIND S	WIND D	SHIP COURSE/SPD.
0100	25 33	147 56														
0200	25 44	147 55	02		25	1022.0	22.0	21	94	1		100-5-2	22.3	8	100	N-12
0300	25 56	147 54														
0400	26 08	147 53														
0500	26 20	147 53														
0600	26 34	148 00														
0700	26 29	148 00														
0800	26 25	148 06	01		10	1021.0	22.4	17	92	7		190-5-2	22.3	13	190	SW-12
0900	26 20	148 18														
1000	26 15	148 30														
1100	26 10	148 42														
1200	26 05	148 54														
1300	25 59	149 05														
1400	25 53	149 17	03		10	1019.0	23.2	18	73	6		210-5-4	22.5	13	220	SW-12
1500	25 46	149 28														
1600	25 40	149 40														
1700	25 34	149 51														
1800	25 28	150 03														
1900	25 22	150 14														
2000	25 16	150 25	01		25	1018.0	22.7	19	79	1		250-5-4	23.4	11	250	SW-12
2100	25 14	150 30														
2200	25 09	150 41														
2300	25 04	150 52														
2400	25 00	151 00														

REMARKS:

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WAVES IN WHOLE DEGREES; WAVE PERIOD IN SECONDS; WAVE HEIGHT IN WHOLE FEET; SEA LEVEL PRESSURE IN MILLIBARS

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SI-MNH-955c  
3-4-64

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA SURVEY CHART C

DATE 3 June 64

TIME	LAT	LONG	PRES WEA	VIS	SLP	DRY B	DEW PT	HUM %	TL SKY	OPA SKY	WAVES	SEA TEMP	WIND S	WIND D	SHIP COURSE/SPD.
0100	25 00	151 00													
0200	25 00	151 11	03	10	1017.0	23.2	21	87-	5		240-5-5	23.3	18	240	W-12
0300	25 53	151 23													
0400	24 59	151 35													
0500	24 59	151 47													
0600	24 58	151 59													
0700	24 58	152 12													
0800	24 58	152 25	14	10	1017.5	23.4	20	81	7		250-5-7	23.1	10	240	W-12
0900	24 58	152 38													
1000	24 57	152 50													
1100	24 57	153 02													
1200	24 57	153 14													
1300	24 56	153 26													
1400	24 56	153 39	03	10	1017.5	23.6	20	80	4		290-5-5	24.1	12	240	W-12
1500	24 56	153 51													
1600	24 56	153 57													
1700	24 56	153 59													
1800	24 57	154 12													
1900	24 58	154 25													
2000	24 57	154 37	01	25	1017.0	22.7	17	70	3		300-5-5	24.1	18	300	W-12
2100	24 58	154 42													
2200	24 58	154 54													
2300	24 58	155 06													
2400	24 58	155 18													

REMARKS:

ALL TIMES LOCAL (WHISKEY); WIND DIR. IN WHOLE DEGREES; WIND SPEED IN KNOTS; TEMPERATURES IN FAHRENHEIT; VISIBILITY IN NAUTICAL MILES;  
WAVES IN WHOLE DEGREES; WAVE PERIOD IN SECONDS; WAVE HEIGHT IN WHOLE FEET; SEA LEVEL PRESSURE IN MILLIBARS



SI-MNH-955c  
3-4-64

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA SURVEY CHART C

DATE 4 June 64

TIME	LAT	LONG	PRES	WEA	VIS	SLP	DRY B	DEW PT	HUM %	TL SKY	OPA SKY	WAVES	SEA TEMP	WIND S	WIND D	SHIP COURSE/SPD.
0100	24 58	155 28														
0200	24 59	155 37	01		25	1017.3	22.2	17	73	2		290-5-5	23.9	5	320	W-12
0300	25 00	155 51														
0400	25 00	156 03														
0500	25 00	156 15														
0600	25 00	156 26														
0700	25 00	156 38														
0800	25 00	156 50	02		25	1018.1	22.2	17	72	1		320-5-2	23.9	4	310	W-12
0900	25 00	157 01														
1000	25 00	157 31														
1100	24 58	157 00														
1200	24 42	157 00														
1300	24 22	157 00														
1400	24 02	156 50	03		10	1017.8	24.7	18	66	7		270-5-2	24.8	5	270	S-12
1500	24 11	156 59														
1600	24 00	156 59														
1700	23 44	156 58														
1800	23 38	156 59														
1900	23 30	156 59														
2000	23 30	156 59	02		10	1018.0	24.1	18	64	6		200-5-2	25.2	5	200	S-12
2100	23 25	156 58														
2200	23 12	156 57														
2300	22 57	156 56														
2400	22 49	157 00														

REMARKS:

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WAVES IN WHOLE DEGREES; WAVE PERIOD IN SECONDS; WAVE HEIGHT IN WHOLE FEET; SEA LEVEL PRESSURE IN MILLIBARS



SI-MNH-955c  
3-4-64

SMITHSONIAN INSTITUTION  
DIVISION OF BIRDS  
AT SEA SURVEY CHART C

DATE 5 June 64

TIME	LAT	LONG	PRES	WEA	VIS	SLP	DRY B	DEW PT	HUM %	TL SKY	OPA SKY	WAVES	SEA TEMP	WIND S	WIND D	SHIP COURSE/SPD.
0100	22 28	157 57														
0200	22 28	157 57														
0300	22 18	157 00														
0400	22 08	157 01														
0500	22 00	157 02														
0600	22 00	157 02														
0700	21 52	157 10														
0800	21 43	157 20														
0900	21 33	157 30														
1000	21 23	157 40														
1100	21 14	157 47														
1200	21 14	157 48														
1300	21 18	157 52														
1400																
1500																
1600																
1700																
1800																
1900																
2000																
2100																
2200																
2300																
2400																

REMARKS:

ALL TIMES LOCAL (WHISKEY); WIND DIR. IN WHOLE DEGREES; WIND SPEED IN KNOTS; TEMPERATURES IN FAHRENHEIT; VISIBILITY IN NAUTICAL MILES;  
WAVES IN WHOLE DEGREES; WAVE PERIOD IN SECONDS; WAVE HEIGHT IN WHOLE FEET; SEA LEVEL PRESSURE IN MILLIBARS